The Dock and Harbour Authority

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Editorial

The Port of Hong Kong.

The first of the series of articles on Far Eastern Ports which are being written for us by Professor C. A. Middleton Smith, M. Sc., M. I. Mech. E. (Taikoo Professor of Engineering in the University of Hong Kong) appears in this issue, and deals with the Port of Hong Kong.

Hong Kong was ceded to the British in 1841, and is situated on an island about 32 square miles in area, the harbour extending over an area of 11 square miles, and therefore affording a safe and extensive anchorage for all types of vessels. Many schemes for the development of the port have been considered, and one which was drawn up in 1924 by the Port Engineer, Mr. Duncan, was not carried out owing to the great expense involved. This scheme included the construction of seventeen additional berths for the more economical handling of the import trade.

The trade of Hong Kong has been decreasing considerably in the past few years, as is shown by the import and export figures. Imports for 1934, the last year for which details are available, amounted to £31,700,000, this being a decrease of £40,400,000, as compared with 1924. Exports also declined heavily, the figure for 1934 being £24,800,000, and in 1924 it reached £63,600,000, a drop of £38,800,000.

Professor Middleton Smith describes the Port of Hong Kong very fully in this issue, and this port also forms the supplement for this month.

Port Progress at Liverpool.

From the 1st July to the 14th November last, 7,320 foreign and coastwise vessels, representing a register tonnage of 8,299,110, entered the Mersey Docks. Compared with the corresponding period last year, these figures indicate that 70 more vessels were dealt with, representing an increased register tonnage of 81,792.

The import and export trades of the port also show satisfactory expansion. On the import side the figures for grain, sugar, tobacco and wool are encouraging, and there have been notable increases in the shipments of apples from Canada, oranges from South Africa and pears and grape-fruit from U.S.A. Motor cars and cycles, steam and electric locomotives and agricultural and electrical machinery are but a few of the many manufactured articles which have contributed to overseas exports.

Liverpool is keenly alive to the possibility of increased trade with the Dominions, and the Port Authority and the Chamber of Commerce are looking forward to the visit this month, of the High Commissioner for Canada, the Hon. Vincent Massey, who is now in this country for the purpose of fostering Anglo-Canadian trade.

Heavy Imports of Timber at Hull.

One of the most notable features of the work at the Hull Docks in October was the heavy imports of timber from abroad, which brought the total for the ten months to date up to 1,386,979 loads, comparing with 881,486 loads in the corresponding period of 1935. Sawn wood alone represented 835,673 loads, an increase of nearly 200,000 loads, and pit props, etc., 353,306 loads, an increase of over 289,000 loads. A record for the port is thus being established, for it is now certain that the imports for 1936 will exceed those of any previous year. At times the pressure on dock accommodation and other facilities has been very great, and delays to shipping have been inevitable. The surprising thing is that the congestion has not been greater. It, however, emphasises the urgent need there is for the scheme which the London and North Eastern Railway have put forward for additional discharging berths and the remodelling of the land arrangements at Victoria Dock, negotiations regarding which had perforce to be suspended over the busy season. The estimated cost of the improvements is £150,000, but before undertaking this heavy expenditure the directors are anxious that the timber importers and others who lease land on the dock and in its vicinity should come into an agreed scheme to send a larger percentage of the imports for inland destinations by rail than is now the case. Road haulage has grown enormously in recent years, and though it has in the past season contributed to relieve the pressure at the docks, it is taking from the railway revenue which, as owners of the dock, the directors consider themselves entitled to. It is hoped that an amicable arrangement will soon be announced and that the much-needed work will be vigorously taken in hand in readiness for next season.

Southampton Docks.

With the completion of another satisfactory monthly return, relating to October, the quantity of shipping tonnage entered inwards at Southampton Docks during the first ten months of this year aggregated 15,954,016 gross tons, revealing an increase of 428,724 tons over the corresponding period of last year. With figures for two months of the present year still to be added it is now almost certain that 1936 will prove a record-breaking year easily eclipsing the standing highest total of 17,991,539 gross tons attained in 1935.

During the year much work of an important character has been carried out at the Docks Extension Estate where all the permanent way siding accommodation has now been provided. Altogether twenty-six miles of permanent way have been laid down on the Estate which is connected with the old Docks Estate and the Southern Railway Company's main line near Millbrook Station. A scheme is well advanced for the provision of small factories, complete with offices, for the use of firms who are desirous of obtaining accommodation in such an advantageous position as the Port of Southampton offers. Access by road and rail will be afforded.

A feature of the import traffic during recent months has been the heavy shipments of timber received, principally from the Baltic and the Kara Sea. Throughout the post-war period and more particularly the last few years the importations of timber have increased in a gratifying manner. Considerable success has attended the efforts made to develop the importation of Canadian softwoods through Southampton and there has also been a marked improvement in the tonnage from Northern European countries. Already this year more timber has been discharged at the Docks than during the whole twelve months of 1935, and a comparison effected between the quantities dealt with in the periods January to October 1936 and 1935 shews an increase of fifteen per cent. in the later period.

News from all Quarters

Norway

AT Hommelvik, the home-town of the Norwegian Premier, a new deep-water quay is to be constructed. It is becoming an important export harbour for shipments of Swedish lumber. The new quay will be completed during the summer of 1937.

Denmark

Shell Oil of Copenhagen are reported to be about to build a new tank store at Grenaa in Jutland. The plant comprises 210 cubic metres tank for crude oil above ground, and two subterranean tanks of 100 cubic metres, also for crude oil, and two petrol tanks with a capacity of 4,000 litres each. The oil-bunkers will be built on a site covering 2,100 square metres, which allows of an eventual expansion of the plant to double its present size.

The budget for the Port of Copenhagen for 1937 estimates receipts at 4,697 million Kr., compared with the 1936 estimate of 4,615 million Kr. Expenditure on liabilities and pensions is expected to be higher, 807,000 Kr., against 775,000 Kr. It is proposed to set aside 201,000 Kr. for the reserves. A review of the current year states that a considerable increase in income will enable 557,000 Kr. to be placed to reserve instead of the 118,000 Kr. intended.

France

During September 594 vessels entered the Port of Marseilles, discharging 360,380 tons of cargo and 44,959 passengers. Of these vessels 397 were French-owned, and unshipped 191,460 tons of cargo and 41,591 passengers. Of the 197 foreign ships 55 were Italian of 122,962 tons, 51 British of 266,635 tons, 17 Spanish of 16,484 tons, 11 Dutch, and 10 Danish. The remainder came from Germany ,U.S.A., Greece, Japan, Norway and Sweden.

Ships leaving Marseilles totalled 603 of 1,270,388 tons, taking with them 133,108 tons of cargo and 64,229 passengers. French ships numbered 412 of 608,669 tons, accounting for 112,092 tons of the total cargo and 59,205 passengers. Of the foreign ships, 50 were British of 262,947 tons, 49 Italian of 120,271 tons, 15 Spanish of 10,765 tons, and 12 Dutch of 61,917 tons.

Manchuria

The harbour of Hulutao on the Gulf of Pechili, which is being constructed by the South Manchurian Railway Company, has progressed so far that it has been decided to throw the harbour open to traffic on the 1st February, 1937.

Egypt

On November 1st, the Customs Authorities declared a free harbour zone in the Port of Alexandria. This zone is to extend from jetty 35 to jetty 41, and includes the customs depot 44 to 47. The decision is provisional and experimental. When made final the jetties will be outfitted with every modern dock appliance. In the free harbour the importation of Egyptian produce destined to be mixed with foreign produce for purposes of re-exportation, will proceed without formalities. The conditions for the port in general will correspond to those prevailing at Port Said. Special facilities are to be provided for unloading, storing and transport to expedite mixing, division and repacking of goods and produce. Coffee, oils, beverages and liquids of various sorts are the goods, the handling of which is here provided for.

Malay Peninsula

The plans for the general reconstruction of the Port of Rangoon have now been approved, after over two years of study by a special commission. The cost will be nearly two crores of rupees. During 1935 the realignment of the foreshore frontage between Godwin Road and Crisp Street was pushed forward, and most of the reclamation work was completed. At a cost of 7,360 rupees the reconstruction of Fongyi Street Pontoon Jetty was approved, and this timber structure is being replaced by one of reinforced concrete. Traffic requirements prevented its completion in the scheduled times. In 1935 three timber pontoons were put into operation.

Italy

The Port of Brindisi having suffered a severe blow from the transfer of the India Mail to Marseilles is seeking to obtain for itself a larger proportion of Italian shipping. It claims to be more favourably situated than its rival port Naples, particularly where rapid connection with Asia Minor and Levante ports is concerned. Heavy stress is laid on the fact that the sea journey from Brindisi to the Italian possessions in North East Africa is much shorter than from Naples. During the war the importance of Brindisi as a passenger and freight port declined heavily, the buildings, equipment, etc., were allowed to deteriorate, and since the war attention has been concentrated on the attempt to make Bari into a port. The plans for Bari having miscarried badly, the task of reviving the importance of Brindisi has been set in hand. Buildings are being renovated, modern equipment for transport, loading, etc., installed, and the erection of a new harbour railway station, warehouses and ultimately silos, embarked upon, by special group aided by the Government.

During the five years, 1930-34, an increase in turnover by 59,806 tons took place, and passenger traffic rose during the same period from 28,506 persons to 32,633 persons, having declined in 1932 to only 21,514 persons. It is now hoped, by improved facilities, to induce more shipping lines both to the East and to Europe to use the port, and to increase the number of passengers who travel by land to Cherbourg and Le Havre to embark there again.

The Port of Copenhagen.

The number of ships which entered the Port of Copenhagen during October, 1936, was:—From inland ports 1,107 steam and motor-ships of 184,350 n.r.t., and 27 sailing vessels of 5,575 n.r.t. arrived. Shipping arriving from foreign ports amounted to 819 steam and motor-ships of 428,552 n.r.t., and 23 sailing vessels of 13,787 n.r.t. The total of steam and motor-ships and sailing vessels arriving from both inland and foreign ports for October, 1936, amounted to 1,976 vessels of 632,264 n.r.t.

River Weser Inland Shipping during September, 1936.

Water Conditions on the Weser, which have been unfavourable since the last third of May, continued to be bad during September 1936. Throughout the whole of the last quarter year, water conditions were far worse than during the first two quarters. Draft depth on the Upper Weser from July to September was 1.20 metres (equal to half loading of modern barges), and this was only maintained by means of feeding from the Eder reservoir. On the Middle Weser draft depth was 1.50 metres, or equal to two-third loading of barges. In October conditions were still poor.

Traffic through the Bremen Weser Lock and through the Oldenburg Lock for the Kustenkanal amounted to 296,400 tons in September, 1936, compared with 306,300 tons in the previous month, that is 9,900 tons, or 3 per cent less. The decrease was only on the Middle Weser, where shipments both upstream and downstream were less. Via the Kustenkanal shipments upstream remained about the same as in the previous month, downstream shipments increasing somewhat. As in August, coal carried in both directions amounted to 70,000 tons, and was for the greater part shipped via the Justenkanal. Due to the bad water conditions prevailing no coals whatsoever were carried from the 20th September onwards via the Middle Weser. Of the total carried 215,500 tons (230,800 tons in August) fell to the Middle Weser and 80,500 tons (75,500 tons in August) to the Kustenkanal.

Downstream 185,800 tons passed through the Bremen Weser Lock, that is 11,000 tons or 6 per cent. less than during the previous month. Upstream 30,100 tons were carried or 3,900 equal to 11 per cent. less, chiefly due to decrease in transport of timber.

During the months from January to September 1936, 1,592,700 tons were carried downstream. That is approximately 450,000 tons or 39 per cent. more than during the similar period of 1935. Upstream results were very unsatisfactory. At 275,200 tons scarcely three-quarters of the amount carried in 1935 was reached.

Downstream 76,000 tons, i.e., 5,100 tons, or 7 per cent. more than in the previous month passed through the Oldenburg Lock, due to larger arrivals of coals, gravel and slack. Upstream at 4,500 tons, practically the same quantity passed through the lock as in the previous month.

During the first nine months of the year 332,100 tons were carried downstream. Of this amount 83 per cent. was coal. Upstream 49,400 tons were carried, chiefly scrap iron, piece-goods and grain.

Notes from the North

Dock Telephones.

MERSEY DOCKS AND HARBOUR BOARD has decided, as an experiment, to equip berths at a number of Liverpool docks with telephones for one year. Installations will be made at South-east branch Brocklehurst Dock and South-east branch No. 1 Canada Dock. A charge of 2s. 6d. for each day, or part of a day, will be made for the use of the telephone, and this figure will include local calls, but trunk calls and telegrams from vessels will be payable in addition. Amongst the conditions which have been imposed by the Dock Board are that the hirer will be held responsible for any damage caused to apparatus during the period of hire, and at the end of the experimental period, all the circumstances in the light of experience gained, will be reviewed.

Holyhead wants a New Quay.

Holyhead Town Council has decided to send a letter to Sir George Gillett (the new Commissioner for Distressed Areas) asking that a new quay be built at Holyhead. This, it is pointed out, would enable ships to land passengers at Holyhead.

Floating Bridge Mishap.

Recently, owing to a gale, the Birkenhead-Liverpool ferry goods boats service had to be suspended temporarily. The floating roadway, which belongs to the Mersey Docks and Harbour Board, is very exposed between the river wall and the stage and during the height of the storm, and at a time when the tide was running very swiftly, it was noticed that some of the connections between the pontoons had gone adrift. The goods traffic, which alone uses that part of the stage, was immediately suspended. Dock Board workmen expeditiously carried out repairs. Meanwhile, the traffic, mostly horse-drawn, was diverted to Wallasey, motor vehicles, of course, proceeding through the tunnel.

First Aid Training for Dock Board Staff.

Lady Warner, the wife of Sir Lionel Warner, general manager and secretary of the Mersey Docks and Harbour Board, recently presented merit certificates to employees of the Board who have become qualified in First Aid. In order to encourage the employees to become qualified first-aid men in the interests of the normal working of the service—and in connection with air raid precautions—classes have been formed. Each employee obtaining a certificate is granted a weekly monetary allowance and one week's holiday with pay for the ensuing twelve months. Fortnightly classes are held during the winter, and, providing men attend a minimum of ten of these classes and pass their re-examination at the end of each twelve months, they will continue to be granted the allowances. All expenses in connection with the training are borne by the Dock Board.

Poulton Bridge.

Delay has occurred in freeing from tolls the Poulton Bridge, which crosses the docks between Birkenhead and Wallasey. The Ministry of Transport intimated their willingness to make a grant of 60 per cent. towards the cost of road-making, and a few weeks later the Ministry of Health gave sanction for the borrowing of the money. The Mersey Docks and Harbour Board has now intimated:—"In the opinion of the Board it would be inconvenient and uneconomical to free Poulton Bridge from tolls before the work on the roadway on either side of the bridge is completed." The question of freeing the bridge from tolls has been under discussion for many years.

Plans and specifications are being prepared, and tenders will shortly be advertised for the work of road reconstruction which is to be carried out by Birkenhead Corporation. Wallasey will pay a proportion of the cost, the chief amount of which will, however, be borne by the Ministry of Transport.

Steel Sheet Piling Selected.

Sir John Wolfe Barry and Partners, consulting engineers, have reported to the Rhyl (North Wales) Council regarding certain difficulties which had arisen in connection with the driving of concrete piles for the training groyne. This report stated (inter alia) that it had been necessary to consider what alternative construction could be adopted in lieu of concrete, and after tests the Council were recommended to adopt steel sheet pile construction for the groyne, which variation in the scheme had been accepted tentatively by the Ministry of Health from an engineering point of view, subject to the addition of a more suitable timber capping than one at first suggested. The report further stated that the estimated additional cost entailed in the proposed variation amounted to £2,608, but as a partial set-off against that it was considered that the piles could be shortened, thereby saving £1,000.

The Council interviewed Mr. Chas. G. Du Cane, acting on behalf of the consulting engineers, also Mr. A. A. Goodall, consulting surveyor, and resolved to adopt the recommendation of the consulting engineers that steel sheet pile construction be used for the training groyne in lieu of concrete.

Birkenhead Fish Dock.

Birkenhead business men claim that Birkenhead has all the natural facilities that would enable it to be made into an efficient fishing port. The proposition has been examined by the Commercial Development Committee of the Chamber of Commerce, whose Chairman, Mr. T. W. H. Humphries, reports that after considerable investigation they come to the conclusion that, owing to many insurmountable obstacles, mainly expense, it would be impossible to convert the docks in such a way as to attract trawler owners.

To attract trawler owners to Birkenhead a considerable amount of money would have to be spent by somebody. The Liverpool Corporation had made application to the Ministry for a loan to convert a site, but it had been rejected. Birkenhead could not talk serious business to the trawler owners until they could tell them what they had to offer in the way of facilities. The presence of a dock, with water in it, was not the facilities that they required. They required much more than that at their present fishing centres.

He would not say that there was no chance of establishing a fishing port in Birkenhead, but the question was: Who was going to bear the expense?

It must be borne in mind that during the past few years it could not be said great prosperity had been enjoyed in any of the fishing ports, and it was a serious responsibility for any authority like the Dock Board to spend a considerable amount of money on an industry which was having a bad time, unless they could guarantee to the trawler owners that they could make more money in Birkenhead than they were doing in their present ports.

Mr. Pyke said they had every facility in Birkenhead not enjoyed by other ports. The third largest fishing port in the country, Plymouth, had not a twentieth of the facilities that Birkenhead enjoyed. In Birkenhead fish could be landed practically all day long, and they had three railway companies ready to offer facilities. There were also ice works that could be extended if necessary, and they had engineering works to cope with all needs, in addition to excellent coaling facilities.

Manchester Ship Canal.

Manchester Ship Canal Company reports that traffic receipts for the month of October amounted to £113,532, representing an increase of £3,752 on October of 1935. The total for the ten months of 1936 is £1,063,297, as against £1,034,790 for the corresponding period of last year. From this it will be seen this important waterway is obtaining a useful share of the increased traffic that has been created by the revival in industry. Statistics applying to the Port of Liverpool also reflect improvement, and reveal that the major Lancashire traffic organisations are getting a good share of the extra trade.

Mersey Tunnel.

Sir Basil Mott, the chief engineer to the Mersey Tunnel Joint Committee, has prepared a report on the question of the use of the lower portion of the tunnel. He states:—

"The tunnel is very far from being full at present, and it seems that an expenditure on additional facilities could not be justified for a number of years. It might, however, be advantageous if pedal cyclists could be accommodated in some other manner than at present, and a temporary use for the lower portion of the tunnel might be found in this connection.

"If escalators were constructed at each end of the tunnel the pedal cyclists could get ready access to the lower portion of the tunnel, and would have it to themselves. Additional lighting would have to be installed, but no artificial ventilation need be provided. The cost of the necessary works and equipment is estimated at approximately £250,000.

"Any connection for whatever purpose to the lower portion of the existing tunnel is an expensive matter, and at the present time it does not appear to be an economic proposition."

Mersey Docks and Harbour Board

Annual Report for the Year ended July 1st, 1936

At a meeting of the Mersey Docks and Harbour Board, held on November 26th, 1936, the annual report for the year ended July 1st, 1936, was presented by Sir Richard D. Holt, Bart. (Chairman). The report was as follows:—

" Gentlemen,

It is my duty to-day to review briefly the work of the year ending July 1st, 1936, and in view of the results achieved it is a decidedly pleasant duty.

" As compared with the previous year the revenue from rates and dues was better by almost £73,000, an increase of nearly 3½ per cent., and the smaller sources of revenue increased by about £23,000, mainly due to an improvement in the surplus from the warehouses. It may be of interest to note that the increase in revenue from rates and dues was mainly derived from goods, which suggest that the ships trading to and from the port were carrying better cargoes.

" Expenditure, excluding warehouses, was reduced by £22,000, so that the surplus of revenue over expenditure is approximately £118,000 more than in the previous year. This reduction in expenditure is wholly due to the saving in interest charges amounting to £93,000, additional expenditure having been incurred in many directions through the necessity of making good postponed repairs, of paying increased wages and doing more work to earn the increased revenue.

" As a result of this improvement the Board can not only meet the full sinking fund, but can place £55,000 to renewals and depreciation, open a new account for provision in respect of displaced or demolished works in connection with improvement schemes by an initial payment of £75,000 and pay £51,400 to unappropriated receipts as compared with £45,500 a year ago.

" Under the Board's Act of Parliament of this year the Sinking Fund has been re-organised on the basis of re-paying the existing debt in a period of 90 years. The payment for this year is £85,882, as compared with a maximum sum of £100,000 per annum under the provisions which were repealed, but the new Sinking Fund is entitled to receive compound interest so that in a comparatively short time the payments to it will exceed £100,000 per annum.

" The tonnage of vessels paying dock tonnage rates has increased by about 284,000 tons to 15,770,906, a figure which has only been exceeded in 1930 when it reached the peak of 16,184,515, and in 1927 when it reached 15,894,407. In the year immediately preceding the war—that ending July 1st, 1914—the corresponding figure was 15,104,996, and the great Atlantic liners were then trading from Liverpool. I find it difficult to sustain any suggestion that out trade is suffering from exceptional distress, and am reminded of the lines in Miss Procter's hymn, ' We have enough yet not too much to long for more.'

" In view of the statements so frequently made as to the distress of the Coasting Trade it may be interesting to note that the total tonnage entering the combined Mersey ports increased from 3,872,200 to 4,077,450, which is the highest figure it has ever attained, except in 1915 when the figure was 4,307,726, and in 1920 when the figure was 4,115,230—the figures for these two years, however, cannot be taken as fair comparisons. In 1915 a large number of colliers entered the port with cargoes of Admiralty coal, and there were many arrivals and departures coastwise of large liners on Admiralty account—whilst the figure for 1920 includes an adjustment of over 1,000,000 tons on Admiralty account covering the war years. Our statistics do not enable us to distinguish accurately between the amount of British and foreign tonnage employed in this trade, but we have no reason to believe that the latter materially exceeds one per cent. of the total.

" During the year we were able to make a reduction of 15 per cent. in the Harbour Rates on all vessels entering the Mersey, but not entering the Board's docks, and a reduction of 2½ per cent. in the Dock Tonnage Rates on all vessels entering the Board's docks which, in a full year, represent a total reduction of revenue of about £46,000. To avoid misapprehension, I should state that 2½ per cent. off the Dock Tonnage Rates is a greater concession to the shipowner than 15 per cent. off the Harbour Rates.

" The Engineer's report will show that we are doing very little in the way of new works—the only great work we have in hand is the improvement of the channels by means of training walls. This work is going on most satisfactorily—the results being fully equal to our expectations, and though progress must necessarily be rather slow, we have every reason to believe that in some five or six years' time the entrance channels to the Mersey will be quite first rate.

" Again I have to thank our most efficient and loyal staff for their work and to acknowledge with gratitude their services in procuring the smooth and harmonious working of the complicated business of a very great Port."

Port of London Notes

London Shipping.

During the week ended October 30th, 953 vessels, representing 971,546 net register tons, used the Port of London. Of these, 484 vessels (764,500 net register tons) were to and from Empire and foreign ports, and 469 vessels (207,046 net register tons) were engaged in coastwise traffic.

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During the week ended November 6th, 1,308 vessels, representing 1,080,101 net register tons, used the Port of London. Of these, 574 vessels (840,632 net register tons) were to and from Empire and foreign ports, and 734 vessels (239,469 net register tons) were engaged in coastwise traffic.

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During the week ended November 13th, 1,178 vessels, representing 979,108 net register tons, used the Port of London. Of these, 410 vessels (749,126 net register tons) were to and from Empire and foreign ports, and 768 vessels (229,982 net register tons) were engaged in coastwise traffic.

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During the week ended November 20th, 1,003 vessels, representing 1,026,275 net register tons, used the Port of London. Of these, 506 vessels (816,346 net register tons) were to and from Empire and foreign ports, and 497 vessels (209,929 net register tons) were engaged in coastwise traffic.

The Port of Ghent.

During the month of October, 1936, 189 ships of 214,669 n.r.t. entered the Port of Ghent, as compared with 144 ships of 159,848 n.r.t. in the corresponding month of 1935. This is an increase of 45 ships and 54,821 n.r.t.

For the first ten months of 1936, 1,714 vessels of 1,801,853 n.r.t. entered the port, as compared with 1,445 vessels of 1,554,429 n.r.t. in the corresponding period of 1935. This is an increase of 1,445 vessels and 247,424 n.r.t. this year.

Bombay Port Trust

At a meeting of the Trustees of the Port of Bombay held on 20th October, 1936, a statement of the Revenue for the first half of the financial year 1936-37 was placed on the table. Total receipts of Rs.118.92 lakhs compare with Rs. 115.34 lakhs during the corresponding period of the preceding year, the increase of Rs.3.58 lakhs being attributable to a general improvement in trade returns, and in particular to a greater activity in exports of cotton, grain, seeds and ground-nuts.

The Board appointed a departmental Committee to investigate and report on the incidence of wharfage rates. The storage rate on iron and steel warehoused in the Docks Duty Paid and Bonded Warehouses was increased from Rs.0-2-11 to Rs.0-4-6 per ton per week, the latter being the standard charge for other commodities assessed on a weight basis.

Imports and exports at the Port of Bombay:—

Quarter ended Sept.	1935-36			1936-37		
	Import Tons	Export Tons	Total Tons	Import Tons	Export Tons	Total Tons
Docks ...	380,842	335,517	716,359	395,726	415,919	811,645
,, (overside and trans-shipment)	60,959	39,050	100,009	57,034	51,664	108,698
Bunders ...	191,507	17,095	208,602	181,518	17,998	199,516
Total ...	633,308	391,662	1,024,970	634,278	485,581	1,119,859
Total from 1st Apr. to 30th Sep.	1,438,879	966,501	2,405,380	1,408,852	1,152,476	2,561,328

Vessels other than ferry steamers, hired transports, Government vessels and country craft, which entered the Port of Bombay:—

Quarter ended Sept.	1935-36		1936-37	
	No.	Net register tonnage.	No.	Net register tonnage.
Vessels engaged in foreign trade ...	208	929,893	196	897,927
Vessels engaged in coasting trade ...	269	410,766	353	510,810
Total from 1st April to 30th September	1,263	2,873,685	1,431	2,937,372

Hull and the East Coast

Navigable Channels of the Upper Humber.

THE Marine Committee of the Humber Conservancy Board have had under consideration the question of the navigable channel of the Upper Humber, and the contention of Goole pilots that there is a navigable channel which remains unmarked. A letter had been received from the Goole pilots complaining that the lighting of the channel between the Middle Whitton Lightship and the No. 1 Light-float in the Upper Humber was inadequate. It was mentioned to the Marine Committee that at a meeting of the Pilotage Committee the Goole pilots' representative had said that he believed that there was a perfectly good channel down the Yorkshire shore from Brough to Hull, and that pilots and tug masters were reported to have been navigating through it. The Board's Engineer (Major A. E. Butterfield) subsequently investigated the matter and made a report. At the same time he submitted a survey, showing that the present marked channel at the point named above Hull was a good one with easy curves all the way from Whitton to South Ferriby. On the other hand, the unmarked channel from Oyster Ness was encumbered with sand banks. The only channel existing at this point was, he said, a narrow " cut," 200 ft. wide, between two sands. The Marine Committee thereupon decided that the unmarked channel down the Yorkshire shore from Brough to Hull referred to by the Goole pilots was " absolutely unstable and unpracticable," and that the present marked channel was adequately lighted. This decision the full Board endorsed. Mr. G. A. Hatfield, master of the steam launch " W. S. Wright," retired after 40 years in the service, and seaman R. Hopper was appointed to succeed him for a probationary period of three months.

It was reported at the recent meeting of the Humber Conservancy that proceedings had been commenced against the Board by the owners of the Danish steamer " Neptun " (which sank in the vicinity of the Middle Whitton Lightship on June 27th) to recover damages following the loss of ship and cargo. The Board is contesting the action.

Humber Road Bridge Project.

The immediate outlook for the success of the project to build a road-bridge over the Humber to connect Hull with North Lincolnshire is not so hopeful. Mr. Hore Belisha, Minister of Transport, replying to questions in Parliament, said that the Government had examined the cases presented for new bridges over the estuaries of the Forth, the Severn and the Humber, and had felt bound to have primary regard to the overriding importance of the National defence programme and the demands which that programme would progressively make upon the National resources. The Government had, therefore, come to the conclusion that they would not be justified in embarking upon the execution of these public works at the present moment. The Minister added that this decision did not exclude the reconsideration of these projects at a later date. The Humber scheme, sponsored by the Hull Corporation with the support of neighbouring public bodies in the East Riding of Yorkshire and North Lincolnshire, provides for a road-bridge with a single central span which would be the largest in the world, and permit of the uninterrupted navigation of vessels passing up the river to the Port of Goole. Plans have been prepared by Mr. Ralph Freeman, of Sir Douglas Fox and Partners, and the estimated cost is £2,600,000, towards which it has been hoped the Ministry of Transport would contribute a substantial sum, possibly up to 75 per cent. of the estimated total expenditure. The local authorities are not in a position to find the whole of the money, and presumably will not be able to proceed with the project until a more favourable opportunity occurs. The new Lord Mayor of Hull (Alderman Holmes), speaking at a public gathering, however, intimated that the matter would not be allowed to drop, but that the Corporation would continue to hammer at it.

Coal Shipments from the Humber Ports.

The shipments of coal (cargo and in bunkers) at Hull during October amounted to 219,590 tons, as against 245,494 tons in October last year, thus bringing the total for the ten months—January-October—up to 1,746,443 tons, compared with 2,053,758 tons—a decrease of rather more than 300,000 tons. At Immingham Dock the shipments for October were 188,812 tons, as against 200,299 tons, and for the ten months 1,411,161 tons, against 1,593,605 tons. At Grimsby, the January-October total was 919,754 tons, compared with 950,525 tons. The export trade does not improve, but with the arrangement of a new commercial agreement with Italy and less drastic import restrictions in France, the outlook certainly is better. The shipping trade at the Hull Docks in October was fairly active, the principal imports including wheat and kindred cereals, 157,557 tons, oilseeds, nuts and kernels 79,985 tons, sheep's wool 156,359 centals and petroleum 13,668,000 gallons—in each instance an increase over October, 1935.

The River Humber: Some Interesting Particulars.

Some very interesting particulars concerning the River Humber were made by Major A. E. Butterfield, M. Inst. C.E., M. Inst. N.A., engineer to the Humber Conservancy Board. The Humber, he recalls, is one of the finest natural harbours in Great Britain, providing safe anchorage for innumerable craft of the largest size. As a highway of commerce it serves, with its tributaries, the rivers Ouse and Trent, together with their various connecting systems of canals, the whole of Yorkshire, and the Midlands, parts of Lancashire, and even further afield. Strictly speaking, however, the Humber is not a river but an estuary formed by the junction of the Ouse and Trent, 39½ miles from the sea. It is tidal to Naburn, 6 miles below York on the Ouse and to Dunham, 41 miles up the Trent. It serves the Port of Grimsby, 6¼ miles, the Immingham Dock 12½ miles, Hull 22 miles, and Goole on the Ouse 47½ miles from the sea. It is 4½ miles wide at its mouth, 7½ miles wide at Cleethorpes, 3½ miles wide immediately above Grimsby, and two miles wide at Hull. The Humber has a great advantage over most navigable rivers inasmuch as it has no bar at its mouth, and thus the very heavy expense which other ports, notably Liverpool, have to incur in dredging the entrance is avoided. The area of the estuary is 110 square miles, and it drains over 9,000 square miles or one-sixth of the area of England.

Its tidal capacity is 2,000 million cubic yards. At Hull the tide rises 21 ft. 9 in. on spring tides, and 16 ft. 9 in. on neap tides. Apart from the advantage of this tidal rise to shipping, Major Butterfield points out that it is seldom realised what a tremendous benefit this fluctuation in the level of the water in the Humber is to the people living on or near its shores: and likens it to a huge lung, 110 square miles in extent, expanding on an average 20 ft. twice every 24 hours. The displacement of millions of cubic feet of fresh air by the rise of the water and the alternating refilling of the space caused by the fall of the tide has a beneficial effect upon the health of the people, which is incalculable. The navigable channel from Hull to the sea is capable of taking the largest vessels afloat, and is of considerable width. It carries from 24 to 30 ft. minimum depth at low water, and provides 46 to 52 ft. at high water of spring tides. The average width of the navigable channel at Hull is 500 yards, but between Hull and Immingham it becomes wider and maintains a width of a thousand yards practically to the sea. It is often stated that the navigation of the Humber is difficult owing to shifting sands and the rapid movement of its channels. Major Butterfield points out that whatever may happen above Hull, this is not true of that portion of the estuary between Hull and the sea. Although some of the sands are subject to constant variation, the channel remains fairly stable and seldom have alterations to be made in the buoyage and beaconage. The Humber is acknowledged to be one of the best buoyaged rivers in the world, and its lighting equipment is of the most up-to-date type. There are seven lighthouses, five manned light-ships, 16 small unattended light-vessels, 12 lighted buoys and 13 unlighted buoys. One of the light-ships, the " Spurn," it is claimed possesses the most modern equipment which engineering science can produce. It has, in addition to the usual fog-horn, which is electric, a submarine fog signal and a wireless beam fog signal. By synchronising the two latter, mariners can ascertain their exact distance from the light vessel. The unattended lightships, commonly known as light-floats, are small steel vessels 40 ft. long. The illuminant is oil gas contained in a cylindrical holder in the hold of the vessel. The optical apparatus is automatic and will continue without attention so long as the supply of gas lasts, approximately six months.

All the unattended lightships and light buoys are now being converted from oil gas to dissolved acetylene gas. When this is completed they will continue to function for 12 months without attention. The most important lighthouse is at Spurn Point; it acts both as a guide to vessels passing the Humber as well as marking the northern edge of the fairway into the Humber. The river frontage at Hull presents an imposing appearance. From Saltend, with its magnificent oil depot, it continues to the St. Andrew's Dock at the western end in an almost uninterrupted line of docks, and is 6¾ miles in extent.

Above Hull the Humber is more deltaic in formation. Although the navigation admittedly becomes difficult, there is an unceasing stream of ocean-going vessels to and from Goole,

Hull and the East Coast—continued

and a list of inland-water craft whose destination may be almost anywhere in England. The navigable channel, though migratory, is surveyed daily, and no time is lost in altering the navigation marks so that the deepest water may be clearly indicated. The Humber and the River Trent as far as Gainsborough, are under the control of the Humber Conservancy Board, of which Mr. J. H. Fisher, J.P., is Chairman, Mr. J. Bentley Bennett, Deputy-Chairman, Mr. A. W. Franklin, Secretary, and Major A. E. Butterfield, M. Inst. C.E., Engineer.

North-East Coast Notes

Fostering Norwegian Trade.

IT was explained at the meeting of the Tyne Commissioners in Newcastle in October, that a communication had been received from Messrs. Fred Olsen and Co. in regard to the provision of accommodation for traffic carried on by the firm's steamers between the Tyne and Oslo. Mr. Albert Blacklock, Secretary to the Commission, submitted proposals for the construction by the Commissioners of a quay between the Albert Edward Dock entrance and the North end of the Commissioners' quay with necessary railways and sidings, and equipped with a transit shed 250 ft. long by 80 ft. wide, with quay cranes with road access to and egress from the quay over the dock estate at an estimated cost of £40,000. The Port Facilities Committee recommended that it be authorised to carry out these recommendations.

Sir Arthur Sutherland, who presided, in moving the adoption of the report, said that the idea of the proposed quay was not a new one. Ten years ago the late Lord Kirkley was favourably affected to such a project, and the then existing Unemployment Grants Committee was asked to assist, but owing to the immaturity of the plans the Committee was not favourably disposed to the scheme. Twelve months ago the project was revived following an inquiry from Messrs. Fred Olsen and Co. for improved facilities. The Commissioners' Engineer-in-Chief, Mr. R. F. Hindmarsh, had drawn up a scheme for a quay with a depth of water alongside of not less than 22 ft., and with all the requisite appliances for the quick handling of traffic.

One member pointed out that the transfer of the Olsen trade to the lower part of the river was a loss to Newcastle Quay, but other speakers pointed out that it meant the conserving of a trade to the Tyne which, otherwise, might have gone to either the Wear or Humber. It was a developing trade.

The report was adopted.

Wages Advances for Workers.

The Wages Joint Committee of the Tyne Commission at the meeting named, recommended that an advance estimated to cost £2,000 in a full year, be granted to workers of 21 years and over in the Commissioners' service not covered by the engineering trade award or other agreements, and whose wages had not otherwise been increased, the increase to be 1s. per week as from the first fortnightly pay this month, and 1s. per week as from the first fortnightly pay in January next. The recommendation was accepted.

Mr. Norman Dunn was appointed professional auditor to the Commission in succession to the late Mr. W. B. Ormond.

Two instances of smart work on the Tyne were reported in October. The steamer "Glanton" shipped 4,344 tons of unscreened and small coal cargo and bunkers in 7¾ hours at the new Jarrow coaling staith. In the other case, the steamer "Stelling" only 26 hours after her arrival left the river on completing the loading of 2,500 tons of foundry coke and 180 tons of bunkers in 23 hours and 10 minutes. This is believed to be a record for coke loading at Tyne Dock.

Trade Facts and Figures.

For the first time this year Tyne coal and coke shipments on October 22nd surpassed those of the previous year. The quantity was 10,684,598 tons, compared with 10,678,129 tons for the corresponding period of last year, an increase of 6,469 tons. Since then there had been fluctuations, but there is little doubt but that the year's trade will show an increase on the figures of its predecessor. It was reported at the meeting of Tyne Commission in October that general merchandise handled at the Commissioners' docks and shipping places in the nine months of the year totalled 121,927 tons against 102,564 tons a year ago, an increase of 19,363 tons. In the past nine months 183 vessels took 21,570 tons of oil fuel bunkers compared with 148 ships and 23,064 tons in the corresponding period of 1935, an increase of 35 vessels, but a decrease of 1,494 tons of oil.

Mr. R. M. Sutton, presiding at the October meeting of the Blyth Harbour Commission, reported that coal shipments for the nine months ended September were 5,006,918 tons, as against 4,633,155 tons in 1935; and 4,144,364 tons in 1929. These totals show an increase of 8 per cent. on 1935, and 21 per cent. on 1929. It was reported to the meeting that an additional 3-ton electric crane, with luffing jib was being added to the South Harbour equipment, and would be ready for use in the course of two or three weeks. The Engineer reported that good progress had been made with the extension of the tidal basin in the upper harbour, and the first of the jetties would be finished and ready as a waiting berth to accommodate vessels before the end of the year.

Sunderland Dock Improvements.

More storage ground at Hendon Dock is to be provided by the construction of a wall across the disused channel at the east side of the Dock, and filling in solidly behind. This was decided at the meeting of the River Wear Commissioners in October, when it was stated that the scheme would permit of the track for the quay cranes being extended for about 100 ft., and that the ground gained for the storage of pit props or other goods would amount to nearly one-sixth of an acre. The cost would not exceed £5,000.

The coal and coke shipments from the port for the nine months of this year were 3,016,065 tons, an increase of 181,542 tons on the corresponding period of last year. Other exports for the same period totalled 35,753 tons, an increase of 5,501 tons on last year. The chief items were: Machinery, 7,807 tons, against 1,653 tons; pitch and tar, 4,590 tons, against 7,609 tons; petroleum, 14,786 tons, against 14,276 tons; sundries, 7,355 tons, against 6,714 tons. The imports for the past nine months totalled 241,587 tons, a decrease of 20,643 tons. The leading items were: Timber and props, 75,648 loads, against 103,698 loads; grain, 9,629 tons, against 5,561 tons; esparto, 17,546 tons, against 17,090 tons; iron ore, 34,989 tons, against 32,131 tons; cement, 14,260 tons, against 13,763 tons; petroleum, 54,793 tons, against 63,230 tons; iron and steel, 3,007 tons, against 666 tons; sundries, 27,123 tons, against 21,410 tons.

Tyne Commissioner Honoured.

The October meeting of the Tyne Improvement Commission was marked by a pleasant episode, for a presentation was made by Mr. H. P. Everett, an ex-chairman of the Board, of a portrait in oils of himself, executed by Mr. T. B. Garvie. It will be placed in the Board Room where are hung portraits of previous chairmen. Sir Arthur Sutherland, Chairman, in accepting the gift on behalf of the Board, said Mr. Everett was elected a Commissioner in 1912, and was now senior in service after himself (the speaker). In 1922 Mr. Everett was appointed Chairman of the Harbour and Ferries Committee, which office he held for eight years. In November, 1925, he became their first statutory deputy-chairman under the chairmanship of the late Lord Kirkley, and held that office until November, 1930, when he was elected Chairman of the Board, and continued until November, 1935. Mr. Everett would always be remembered for his cheery optimism in times of most acute industrial depression. "Cheerful yesterdays, and confident to-morrows" seemed to be his watchwords. He had been a tireless worker, always accessible, always helpful, and had given unlimited time to the work of the Commission. Even now he was not allowing himself to get out of harness, but had taken the chair of the Finance Committee. His services to the industrial life of Tyneside and to the Commission were recognised by the Minister of Transport who, in December, 1935, appointed him a life member of the Commission.

In recognition of his long services to the Commission, Mr. Everett was presented with an antique silver two-handled cup and a tankard. Mr. Everett, in returning thanks for the gifts, said many improvements had been carried out on the river and more were in contemplation. The Commissioners were always looking ahead and providing for future trade. The success of the past, he added, will be eclipsed in years to come, and I thoroughly believe there are greater times in store for this river, nor do I think they will be long in coming.

PORT OF HONGKONG

DEVELOPMENT SCHEME

RECOMMENDED BY THE PORT ENGINEER, Mr. JOHN DUNCAN, M.INST.C.E., CHARTERED CIVIL ENGINEER.

WARD & FOXLOW, LITH

ONG.

ENGINEER.

NOTE;- Proposed Development shown
Soundings & Contours are in Fat
Proposed Dredging shown in D

Scale of F

FEET 1000 0 1000 2000 3000 4000 50

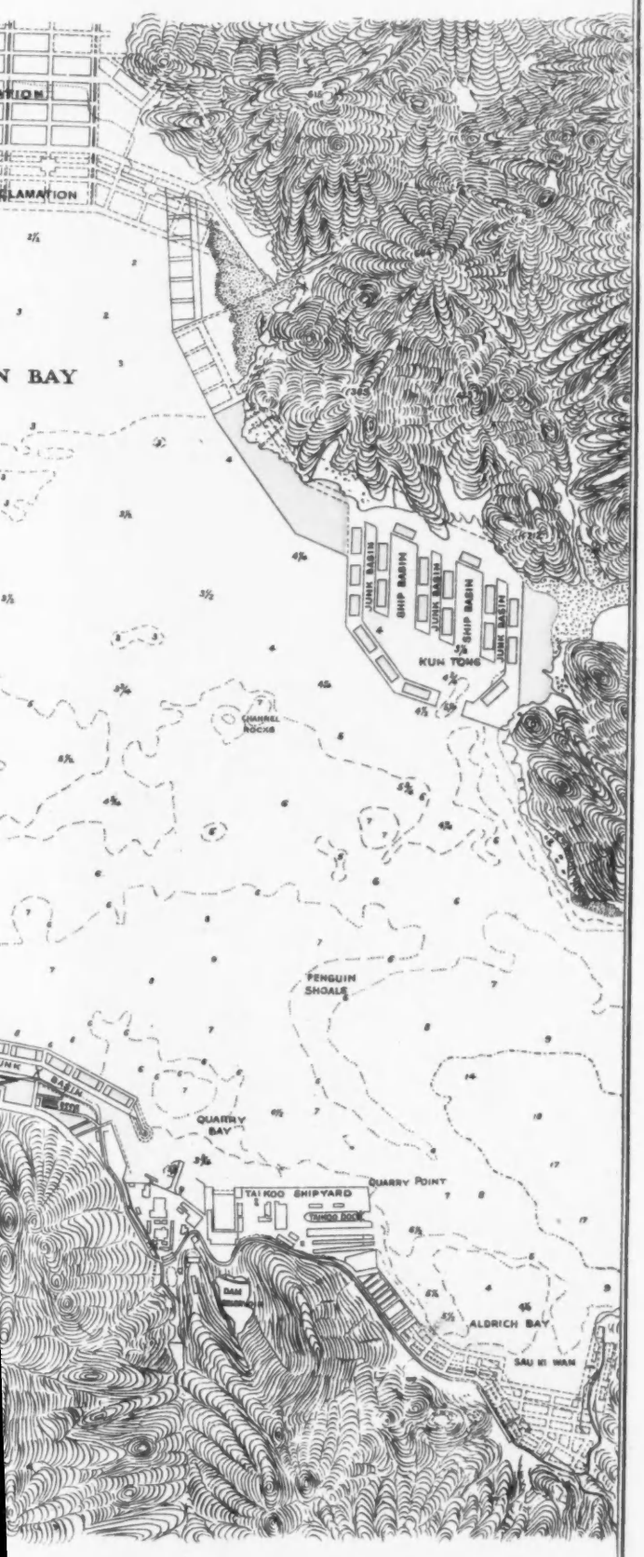
WARD & FOXLOW, LITH., HARCOURT STREET, MARYLEBONE, W.

ER, 1936.

ment shown in Red and Yellow.
urs are in Fathoms reduced to L.W.O.S.T.
shown in Dark Blue.

Scale of Feet.

4000 5000 6000 7000 8000 9000 10,000 FEET



Far Eastern Ports: Hong Kong

By Professor C. A. MIDDLETON SMITH, M.Sc., M.I.Mech.E. (Taikoo Professor of Engineering in the University of Hong Kong)

View of Shipyard of W. S. Bailey & Co., Ltd., Hong Kong.

"THE life-blood of the Colony is shipping" is a phrase constantly quoted in Hong Kong, which is essentially a port; it is also a Crown Colony of great political importance and commercial value to the British Empire, situated on the S.E. coast of China. It is not, to any extent, a manufacturing centre, its most flourishing industries being those connected directly or indirectly with shipping, such as docks and warehouses, banking and insurance undertakings.

The importance of Hong Kong, as a port, and as the centre of British interests in the Far East, has grown rapidly with the increase of the trade of China with foreign countries. That is revealed by the astonishing increase in the revenue of the local Government, which in 1910 was 7 million dollars, and had reached in 1933 a total of 32 million dollars.

Hong Kong Island is only about 32 square miles in area. Geographically, the Colony is a part of China—the island, being separated from the Chinese mainland by a narrow channel of only about ¼ of a mile (at its narrowest), known as the Ly-e-mum Pass. There is also about 380 square miles of British territory on the mainland. The two cities Victoria, on the island, and Kowloon on the mainland, are separated by a channel about one mile wide. The harbour of Hong Kong consists of a magnificent sheet of water. Within the harbour limits is an area of about 11 square miles in extent; the harbour has been characterised by an authority on economics, Dr. H. B. Morse, as one of the few harbours in the world which may be called perfect.

Most people who have never visited Hong Kong would say "It is a seaport in China belonging to Britain." That is but a fraction of the story. A Crown Colony, furthermost from the centre of the British Empire, it is of all the component parts of the Empire, the most romantic and perhaps the most remarkable. It is at once an inspiration and a source of pride to visitors from "home." No other people but the British would have transformed the barren rock, which was a pirate's lair less than a century ago, into an important centre of the shipping industry, and a place where order and justice is guaranteed to all races and creeds. A Chinese remarked "China ceded to Britain a hill of granite and has since received, in return, a mountain of gold."

Hong Kong is now a wealthy and picturesque outpost of Western civilisation in the Far East. It is a charming place, with one of the most lovely harbours in the world, a harbour which has the beauty of a Scottish loch and the appearance of a broad lake surrounded by jagged hills. In it are to be seen ships flying the flags of many nations, numerous Chinese junks, and an almost countless number of native "sampans" or small rowing boats. Incredible as it may seem, families live on these "sampans"; children are born on them and spend most of their lives afloat in, or around, the harbour of Hong Kong.

Commander G. F. Hole, R.N., Harbour Master, Hong Kong.

An Important and "Free" Port.

It is a "free" port; there are excise duties on alcohol and tobacco, but no customs barriers to trade. It is one of the few "free" ports left in this era of tariff wars. The fact that it is "free" is an advantage to the distributing trade, but retards the development of local manufacturing industries. There is a desire in some circles in the Colony to make an arrangement with China to bring Hong Kong within the Chinese Maritime Customs Service, so as to allow local industries to be within the Chinese tariff wall, which, in recent years, has been rising rapidly. The idea is to stimulate local industries, but the proposal has not met with any great support.

In respect to tonnage entered, and cleared, Hong Kong is now one of the largest ports in the world; larger than Southampton or Marseilles, Calcutta or any port in South America. It is a most convenient distributing centre for the goods from abroad, and an obvious outlet for the produce of South China. There is an incessant flow of Chinese emigrants to and from Malaya, the Dutch East Indies, and elsewhere to South China, all of which passes through Hong Kong.

In 1841 Hong Kong was ceded to the British. Trading conditions in Canton, the only port in China (previous to the cession of Hong Kong) available for foreign trade, had become impossible, owing to the constant irritation to Europeans caused by pin-pricks from Chinese officials. British ships had, before 1841, often anchored in the deep and well-protected harbour of Hong Kong, although the Portuguese Colony at Macao, forty miles south of Hong Kong, was a residential centre for Europeans, as no European women were then allowed in Canton. The island of Hong Kong was, in those days, known for the purity of the water, obtainable from the hillside streams; foreign ships called there to replenish their stores of drinking water. The Chinese words "Hong Kong" have been translated as "Sweet Waters."

British "Luck and Pluck."

The pioneers of shipping and trade of the early days in Hong Kong had very different conditions to those of to-day. As late as 1867—some 26 years after occupation by the British—a local newspaper wrote bitterly of the "pestiferous island of Hong Kong," this "charnel house for troops and traders,"

Port of Hong Kong—continued

and demanded its abandonment in favour of some more salubrious locality. Between May and October, 1843, 24 per cent. of the troops and 10 per cent. of the European civilian population died of fever. In 1861 the death rate among the white people was 64.8 per 1,000. During the last 30 years, it has been about 12 per 1,000. But even in the early days the harbour was too valuable an asset to relinquish, in spite of the dreadful casualties in the early days. And so " British luck and pluck " finally triumphed and created this famous modern port.

Modern science has, however, brought about great changes in the Far East. The conditions of life for white residents in Hong Kong in these days are by no means unpleasant. Practically the only draw-back is the humid summer climate; but there are many other compensations, including cheap and industrious labour. In these days even the enervating humidity of the tropics can be (and is) eliminated by air-conditioning apparatus; and an ideal climate can be manufactured in offices, cinemas and homes in the tropics, thus increasing human efficiency and comfort.

Early Shipping Figures.

The first Hong Kong newspaper was published in 1857. Two of the four pages of which it consisted were occupied with a list of ships in the harbour or expected that day; of the 122 ships listed only six were steamers. The biggest was the P. & O. " Ava," of 1,620 tons, from Calcutta. There was also an American sailing ship " Wizard " from San Francisco, of 1,600 tons. In 1935 a ship of 42,000 tons lay alongside a wharf in Hong Kong.

In 1857 days " telegraphic " messages were sent to Trieste for transmission to London, etc. The charge was £1 sterling to Trieste, and 32 shillings for telegraphing 20 words from Trieste.

In the early days the P. & O. and other shipping companies built slipways on the island. In 1857 the first dry dock in the Colony was commenced at a fishing village on the South of the island, re-named Aberdeen by some Scot who found the Chinese name too clumsy. The dock there is still occasionally in use, and is owned by the Hong Kong and Whampoa Dock Co., Ltd., whose main docks and repair shops are on the mainland at Kowloon.

A Terminal Port.

Hong Kong is the keystone in the arch of British trade and political interests in China. It is not only a great commercial port, it is the base of the British defence forces of the Far East. Warships of all descriptions, from submarines to an air-craft carrier, are to be seen lying off the Royal Naval Dockyard, where a large British staff and about 3,000 Chinese workmen are employed. An extensive aerodrome, on reclaimed land on the mainland, is used by civil and Admiralty aircraft. Troop-ships come and go; three battalions of British white troops, various attachments (artillery, engineers, ordinance, etc.), two Indian regiments and the General Staff of the China Command, remind us of its strategic value to the Empire.

Its importance in the world war for trade is difficult to exaggerate. A triumph of British administration, engineering skill, and commercial enterprise, it is to-day a well-equipped port, with ample berthing accommodation for steamers of over 40,000 tons. It is the terminal port for vessels plying between the Western ports of America and those of China, and also for certain ships running between Australia and the Far East. Two large, and several small, commercial dockyards are available for ship repairs. In two of them a few ocean-going steamers and many coasting steamers have been built.

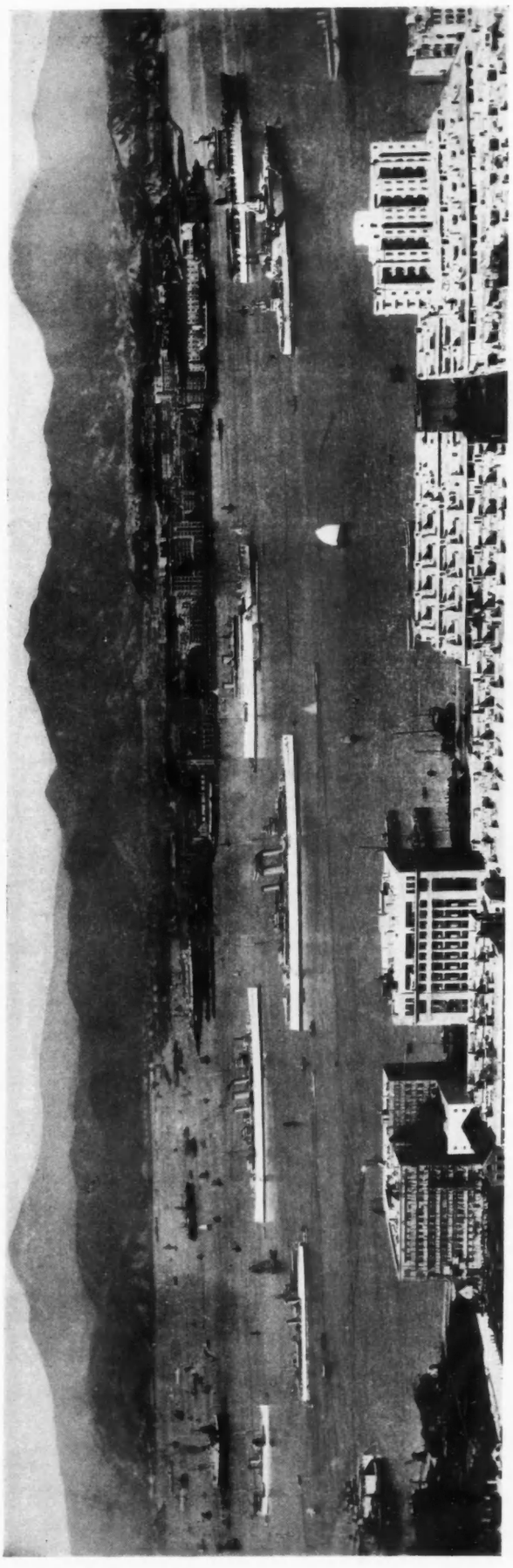
A railway connects Hong Kong and Canton. It has been authoritatively stated that through traffic between Canton and Hankow in Central China, will be run towards the end of 1936. That will inevitably bring about increased trade for the Port of Hong Kong. It should also make possible, in due course, the rail journey from Hong Kong to Calais.

Hong Kong is the headquarters of most of the important British controlled limited liability companies in China, including the great Far Eastern financial institution, the Hong Kong and Shanghai Banking Corporation, Ltd.

Hong Kong, under British rule, soon became an important centre of Western-style school education. About fifty years ago a College of Medicine was founded, the famous Chinese leader, Dr. Sun Yat Sen, being the first graduate. In 1912 a University was opened with Faculties of Medicine, Engineering and Arts.

A Famous Shipping Firm.

Until about 1831 the old East India Company held the monopoly of the British shipping trade in the Far East. Their ships anchored off Whampoa, a few miles from the sea up the Canton River, where the cargoes were loaded or unloaded from or to native craft. In those days Canton was the only port in China open to foreign trade. When the monopoly expired



British warships moored in Hong Kong Harbour. This view is taken from the South side of the harbour (Hong Kong Island) and shows Kowloon on the North side of the harbour, with the hills behind.

Port of Hong Kong—continued

(1831) other British interests came into the shipping trade, the most famous then being the P. & O. S.S. Co., Ltd.

Since those early days a large number of British (and other nations) shipping companies have realised the great advantages of Hong Kong as a port of call. The most recent development has been the fairly frequent visits of huge "round the world cruise" liners, bringing large numbers of American and European tourists to the Colony.

While it may be invidious to make comparisons, there can be no doubt that to-day, so far as general marine interests in the Far East are concerned, the firm of John Swire, Ltd., London, and their associates, are the most important of the British shipping firms trading in the Far East. Those firms have concentrated almost entirely on shipping and allied interests, such as warehouses, a dockyard, insurance, etc. They are not general merchants. They have establishments with shipping offices in Hong Kong and other Far Eastern ports. A subsidiary firm, Messrs. Butterfield and Swire, act as agents for the large fleet of steamers (under the John Swire,

British warships moored in Hong Kong Harbour. This view is taken from the South side of the harbour (Hong Kong Island) and shows Kowloon on the North side of the harbour, with the hills behind.

Chinese workmen repairing bow damage of SS. "President Jefferson," repaired in No. 1 Dock, Hong Kong and Whampoa Dock Co., Ltd.

Ltd., ownership) flying the "red duster" and the flag of the China Navigation Co., Ltd., and plying between Far Eastern ports. They also manage the extensive shipping interests of the Blue Funnel Line (Messrs. Alfred Holt and Co., of Liverpool). In addition, the London firm control the large local works known as the Taikoo Dockyard and Engineering Co., Ltd., and the Taikoo Sugar Works.

"Taikoo" is compounded of two Chinese words, "Tai" meaning "great" and "Koo" meaning "ancient." Rather more than a quarter of a century ago, Messrs. John Swire, Ltd., and associated firms, subscribed £40,000 to the endowment funds of Hong Kong University, and the University Authorities decided to name the first chair of engineering "Taikoo." The writer has had the honour to occupy that chair for 24 years.

There are many other British firms interested in shipping in Hong Kong, most prominent being the P. & O. S.S. Co., Ltd., and the Canadian Pacific Steamships, Ltd. There are several British lines trading on the China Coast with vessels registered in Hong Kong.

The Hub of a Wheel.

The first steamship company to be formed in China was the Hong Kong Canton and Macao Steam Boat Company, formed in 1865 by the British. There have been efforts to form purely Chinese shipping companies, but the Chinese, except for a few recent cases, have not evolved from the family system of co-operation in commerce. A more modern attempt was made, many years ago, in connection with shipping. The China Merchants Steamship Co. was formed, and at one time had a fleet of 31 ships with a total tonnage of 60,000 tons. It is now a Chinese Government concern.

The Colony of Hong Kong consists of the following:—

	Square Miles
Hong Kong island, ceded by China by the Treaty of Nanking of 1842, with an area of approximately	32
Kowloon peninsula, ceded by China in perpetuity by the Peking Convention of 1860, about	4
Territory behind Kowloon peninsula, ceded in 1898 by China in a lease of 99 years, and consisting of the following:—	
Mainland — 286 sq. miles	
Neighbouring islands — 90 sq. miles	376
Total approximate area	412

The geographical position of Hong Kong makes it like the hub of a wheel, the spokes being the transport lines along the rivers of China and to other ocean ports.

By water routes, and in statute miles, the approximate distances between Hong Kong and the important nearby ports are as follows:—

	Nautical Miles
Hong Kong to:—	
Canton (capital of Kwang-tung province, China)	83
Macao	40
Amoy	285
Shanghai	832
Manila	630
Singapore	1,449
Kobe	1,378
Yokohama	1,775
Vancouver	5,950
San Francisco	6,500
Bombay	3,900
London	9,745

With modern transportation, Hong Kong may be reached by steamers from Shanghai in about 40 hours, and from Manila in about 36 to 40 hours; by air from Manila in about five hours. The weekly air-mail service, Penang to Hong Kong and vice-versa, does the journey in 36 hours. London to Hong Kong is now 10 days by air.

Since it is geographically a part of China, and its population overwhelmingly Chinese, any important happenings in China in a political or commercial way, always more or less affects Hong Kong.

Hong Kong Harbour.

The development of the natural harbour of Hong Kong, a harbour of almost unrivalled excellence, has been left almost entirely to private enterprise.

From time to time suggestions have been made to form a Port Authority—as in Singapore—but with no result. It is, however, significant that all pier and ferry leases expire in 1949, and probably some reorganisation will be planned before that date.

Until recent years the movement of commerce to and from Hong Kong was simple. It was attracted by the natural advantages and there was little competition. It made but little difference, physically, with the business of the port whether quays or piers were available, so long as the water in the harbour was deep.

Labour was cheap, ships could load and unload into junks at their moorings, and in many cases the junks distributed the cargo to other places along the China Coast. Strategic water fronts have been, from time to time, acquired and held by private enterprise, for storage space; for cargoes became more and more in demand, as the volume of trade increased. And so, on both sides of the harbour, there are now piers, quays, go-downs, dockyards, etc.

From the earliest days surveys of the harbour have been made. A Report on Harbour Improvement, made by Mr. J. F. Boulton, an Executive Engineer of the Public Works Department to the local Government (1904) refers to Admiralty charts of 1843, 1874, 1885, 1888, 1890, 1894, 1903.

He mentions that the 1874 chart was first published in 1843 and went through many editions, the last available (at 1904) bearing the date 1903. The first survey was made in 1841, but it was, later, impossible to re-establish the datum, so that first survey was not of much use for comparative purposes. There are references to five Admiralty charts of 1903.

Port of Hong Kong

A view showing the Royal Naval Dockyard, Hong Kong, in the foreground, and Kowloon across the Harbour.

Aerial view of Kowloon Docks (Hong Kong and Whampoa Dock Co., Ltd.)

Port of Hong Kong—continued

Mr. Boulton discussed in detail problems of silt, dredging, etc. He estimated that his tentative suggestions for dredging would take 10 years to complete, and that a further deposit of half-a-fathom of material would take place between 1893-1915. His scheme involved dredging 18,000,000 cubic yards of material, or, say 27,000,000 tons, at about eightpence a ton, or £90,000 sterling a year for ten years. In the early days the harbour limits were smaller than those of to-day.

It has been recently estimated that 8 million cubic yards of material have been deposited over the harbour since 1893. It is therefore obvious that extensive and constant dredging must be done in these days. The local Government carries out this essential duty.

The increasing cost of labour, and the possibility of the deflection of trade, led the Government of the Colony to instruct the Port Engineer, in 1924, to prepare a complete scheme for the development of the port. Before that date various commercial interests had agitated for investigations re harbour problems. In 1920 the Shipping and Shipbuilding Committee of the Economic Resources Committee had urged the matter of Harbour Improvements as being of vital importance. They had said that " the harbour is the Colony's only asset " and that " the Government should not play with improvements suggested by amateurs."

In consequence, Sir Maurice Fitzmaurice, C. M. G., M. Inst. C.E., etc., partner in the firm of Messrs. Coode, Fitzmaurice, Wilson and Mitchell, M. M. Inst. C. E., the Consulting Engineers to the Crown Agents—referred to hereinafter as " the Consulting Engineers "—arrived in Hong Kong in November, 1920.

During his stay in Hong Kong the writer was in constant touch with Sir Maurice, who visited the University, giving to the (Chinese) engineering students one of the finest addresses it has been my privilege to hear.

The Consulting Engineers were asked to advise on the following matters:—

(1) Improvements in the harbour generally.
(2) The provision of wharves and warehouses provided with railway communication.
(3) Improvements of a typhoon shelter.
(4) Dredging plant generally.
(5) An additional pier for launches and small craft.

The recommendations under (2) have not been carried out, but efforts have been made to deal with the other items.

Dredging the Harbour.

Although Hong Kong is near one of the mouths of the delta through which the extensive river system of South China pours its large volume of water into the sea, the harbour is not very much affected by the silt brought down by these waters. That silt does, however, affect the Portuguese Port of Macao, some 40 miles south of Hong Kong, and has been partially responsible for its decline as a trade centre.

The silt that is brought down from the neighbouring hills during the heavy tropical rains—a record shows 26 inches of rain in 24 hours—together with the river silt, compels the Hong Kong harbour authorities to dredge the harbour.

The activity in levelling the land for building purposes, recreation ground, etc., has had the effect of making the hillside more friable, and in consequence fairly large deposits of soil are carried into the harbour. This necessitates constant dredging to keep the fairways clear for big ships.

The depth of the harbour ranges from 24 ft. to 72 ft.

There are 51 buoys (18 Class A, for vessels 450 to 600 ft. long; 28 Class B; 5 Class C), all owned by the Government. The charges at A Class are sixteen, B twelve, and C eight (silver) dollars a day, respectively. Permission was granted for the maintenance of 54 private buoys and moorings, the fees amounting to $2,980 (1934). Many vessels anchor in the harbour; others go alongside wharves or quays.

Shipyard of W. S. Bailey & Co., Ltd. Netherlands Co's Dredger and Two Tugs on Slipways.

Concerning Foreign and Local Shipping Trade.

In 1931 some 6,245 British ships, totalling 9,725,627 tons, entered the port. Also 4,006 foreign ships, totalling 8,801,972 tons. In addition, 8,417 Chinese junks, totalling 1,352,993 tons entered.

For local trade, 10,677 steam launches entered, totalling 363,693 tons and 14,114 Chinese junks, totalling 598,005 tons.

The grand total (foreign and local trade) of vessels entered and cleared was 93,754 with total tonnage 41,914,022. The grand total for crews was 2,473,705.

There are no tonnage dues. The Government imposes Light Dues of two and four-tenths cents per ton on all ocean ships, and nine-tenths cents per ton on all river steamers entering the waters of the Colony. A charge of $75 to $350 for ships of 400 tons to 5,000 tons and over is made for cargo working on Sundays. The local dollar varies in value; it is to-day worth 1s. 3¼d. The normal value is about 2s., but in 1920 it rose to 6s. 3d.

The Government maintains a commercial wireless station in which continuous watch is kept. The average day range is 350 miles and the night range is 700 miles.

The articles imported and exported are of a very miscellaneous nature. There are as many as 650 items. The commodities handled in greatest bulk are rice, sugar, wheat-flour, tea, nuts, Chinese medicines, fish, piece-goods (cotton and silk) rattans, oil, iron, and steel, tin, machinery, etc.

It is remarkable that the bulk of the cargo conveyed into Hong Kong from China for export arrives in junks. Even silk comes down from Canton that way and not by rail. It is believed that the Chinese Government officials reduce export tariffs for goods carried on native craft—an equivalent to a subsidy. Also the value of time is almost unknown to Chinese. Goods for the interior—rice, coal, chemicals, etc.,—are transported by junk and river steamer. Junks do a great deal of the carrying trade all along the rivers and coast line of South China.

It is worth noting that in Hong Kong seven days of " free storage " is allowed in transit sheds, while in most of the ports of the world—including those in Great Britain—the period is from 48 to 72 hours. Shanghai gives 10 days,

Port of Hong Kong—continued

Singapore 7 and Kobe 7. In 1924 the Port Engineer in Hong Kong suggested that goods should be removed from transit space within 72 hours in this port.

Typhoon Troubles.

Although Hong Kong Harbour is well protected from winds of average velocity, special works have been carried out because of the prevalence of typhoons, terrific storms that endanger shipping in the Far East. Typhoons have wind velocities at times exceeding 100 m.p.h. In 1931 a wind velocity of 130 m.p.h. was recorded in Hong Kong. A large typhoon affects the weather for nearly 1,000 miles around it, and has an area of about 200 miles, in which winds reach gale force. They come to Hong Kong mostly from the East, with some North, or less frequently with some southerly wind influence. It is recorded that 51 out of 60 typhoons were included in directions varying from N.N.E. to S.S.E. and only nine had a Westerly direction; the directions varied from S.S.W. to N.W. With the exception of the typhoon in September, 1906, there is no record of a typhoon blowing from the South. So that any system of docks provided needs least protection from a Southerly direction.

"Empress of Japan" in No. 1 Dock, Kowloon Docks.

There is now an elaborate system of wireless weather signals from ships and stations on the Far Eastern Coast and the Royal Observatory in Hong Kong. From the latter signals are frequently sent. So that it can be said that those connected with shipping now have ample warning of gales and typhoons, and are able to take the necessary precautions.

The Marconi, and the cable companies generally, convey all weather messages free of charge. The Royal Observatory appeals to all ships when in wireless communication to send in reports, especially if there are signs of bad weather. In 1919 there were received 61 reports; in 1924 the number was 3,370, and in 1934 it was 6,320.

The effect of a typhoon is to raise the level of the sea, but there is little information to show to what extent the level in the harbour is raised. Rather haphazard observations show that High Water of Extraordinary Spring Tides (H.W.E.S.T.) is 7.70 feet above L.W.O.S.T. In September, 1922, a typhoon passed some 270 miles to the South of Hong Kong. At noon, when the predicted tide was 7.7 ft. above L.W.O.S.T., the actual height above datum was 10.05 ft., due to a typhoon 270 miles distant.

It has been suggested that it is better to design transit sheds with precautions against flooding them rather than to build quay walls beyond the level of 14.50 ft. above L.W.O.S.T., the economic height for handling cargo.

Typhoon Shelters.

All along the S.E. part of the China Coast there are many natural typhoon shelters. On the South side of the island of Hong Kong, near the fishing village now called Aberdeen, there is a long inlet which is often crowded with small Chinese craft when a typhoon is expected. It is remarkable that the Chinese fisherman often crowd their craft into this shelter before signals are hoisted; my own observation over 23 years makes me give them full credit for having an uncanny sense of approaching gales.

There are also typhoon shelters in Hong Kong Harbour, protected by sea-walls and breakwaters in which the launches, sampans (small boats) and other small craft take refuge when the typhoon signals are hoisted.

That at Causeway Bay is on the island side of the harbour. The Causeway Bay typhoon shelter is in a handy position for native craft, as it is easily approached during N.E. gales. It is, however, unfortunately placed, because into it run two nullahs, draining hills and a valley behind it. The heavy rains bring down into these nullahs dirt in suspension which results in a deposit of silt in the shelter.

The most recent typhoon shelter, built on the mainland on the North side of the harbour, was completed in 1915. It took five years to build, cost over two million (silver) dollars, and encloses an area of 165 acres. The breakwater is 3,325 ft. long. It consists of a rubble mound, 192 ft. wide at the base, 20 ft. at the top, and 44 ft. in height. For filling, 850,000 tons of earth were used and also 12,543 concrete blocks, of which 11,397 were pitching and paving blocks, each weighing two tons. The position of this shelter makes it difficult for small craft to beat up against N.E. gales, which must be done to reach it.

During the typhoon season (May to October) these circular storms are liable to travel from the direction of the Philippines along the China Coast. The average number in a year is 16.5. It is no unusual sight in Hong Kong to see typhoon warning hoisted at the Observatory. The signals cause small craft to scurry for typhoon shelter; ships in harbour go to allotted typhoon moorings and raise steam; wharves are deserted, houses, shops and offices are shuttered and barred. If the typhoon is near, all cars and buses and ferries cease to ply.

In the 50 years (1884-1933) as many as 73 typhoons approached near enough to Hong Kong to cause a gale. The greatest number was five in 1887. The paths of these typhoons vary and are difficult to forecast. They always cause anxiety in shipping circles.

Amongst the great tragedies of Hong Kong, are those caused by typhoons. The worst on record was in 1906, when the death roll in the harbour was estimated at 10,000, including the Harbour-master, the Bishop, and 13 other Europeans. That typhoon affected Hong Kong for 1½ hours. Great steamers dragged moorings and were thrown up on to the shore.

On September 18th, at 7 a.m., the barometer started falling, and the lower clouds gave indications of an approaching storm. Local signals were hoisted at 8 a.m., and the typhoon gun was fired at 8.50 a.m., but too late to enable junks, sampans and shipping to find shelter. By 9.30 a.m. winds of nearly 100 m.p.h. were wrecking the shipping, and over 20 large vessels and numerous junks and sampans were destroyed in Hong Kong Harbour. The local Observatory was bitterly attacked for lack of warning, but a full investigation showed that with the information then available a longer warning was not possible. Nowadays, such a tragedy is almost impossible. In September, 1874, some 2,000 lives were lost and five million dollars worth of damage was done. In the 1923 typhoon many lives were lost. A wind velocity of 130 m.p.h. was recorded.

Berthing Accommodation.

Although nowadays large liners calling at Hong Kong usually berth alongside a wharf, many of the coasting vessels remain in the stream, loading and unloading into junks. In calm weather there may not be much difference in the time taken to move cargo under either system, but there is no question that there is greater expedition when a vessel is alongside a quay in the typhoon season than if she is at moorings.

That fact no doubt led Sir Maurice Fitzmaurice, and others, to recommend the provision of more berthing accommodation. The whole problem was summarised and brought up to date in an extensive Report made in December, 1924, by Mr. John Duncan, M. Inst. C.E.; very little, however, has been done since that date to improve the facilities for berthing, except in lengthening existing piers and by dredging the channels.

At present practically the whole of the water-front (named the Praya) of the City of Victoria, on Hong Kong Island, and about 3½ miles long, is one long wharf occupied by junks and barges loading and discharging goods, carried by numerous coolies, through the streets to various go-downs of the Chinese.

(continued overleaf)

PORT OF HONG KONG

A View of the Taikoo Dockyard and a portion of Hong Kong Harbour.

Port of Hong Kong—continued

The Japanese O.S.K. Line have a new pier, recently reconstructed. It is 350 ft. long, costing $300,000. The Douglas Pier takes two vessels, 26 ft. draught. There is also the China Merchants' Pier and Jardine's Wharf (West Point) for three vessels of 23 ft. draught at L.W.O.S.T. There are some small piers alongside which river steamers and ferries berth. About 10 passenger-cargo river steamers come and go daily to the island, clearing from their berths every 24 hours. A recent great improvement has been the construction by the local Government on each side of the harbour of piers for vehicular ferries. These ferries enable cars, lorries, etc., to pass easily across the harbour.

At the East end of the island a recent reclamation, due to the enterprise of a Chinese Java sugar merchant, Mr. Kwick Djon Eng, has been completed. It provides a sea-wall (and wharfage) 1,800 ft. long, with a depth of water of 36 ft. The reclamation was originally planned in order to build a sugar factory, and bring ships with raw sugar, etc., alongside. The economic situation re sugar, due to new factories in Java, killed that project. A portion of the land and sea-wall has since been sold to the local Electricity Supply Company, who use it for the discharge of coal.

Chinese Junk, the chief distributor of cargo in China.

Wharves and "Godowns."

Nearly all of the large liners berth alongside piers on the mainland, where there is adjacent excellent accommodation for handling and storing cargo.

Three public warehouse companies have a storage capacity of 560,000 tons, of which 300,000 tons is on the mainland at Kowloon and 200,000 tons in Victoria, on Hong Kong Island. There are many native-owned warehouses of small capacity in the Colony. Both of the groups of wharves at Kowloon Point have rail connection with the Kowloon-Canton Railway.

The Hong Kong and Kowloon Wharf and Godown Co., Ltd., was formed in 1886, with an authorised capital of $1,700,000, for the purpose of amalgamating and working as one concern the undertaking known as Messrs. Jardine Matheson and Co.'s Piers and Godowns, and the undertaking known as The Hong Kong and Kowloon Wharf Godown and Cargo Boat Company. In the following year, 1887, the properties of the Peninsular and Oriental Steam Navigation Company were acquired.

The property obtained from Messrs. Jardine Matheson and Co. consisted of:—At West Point (on mainland): One wharf and 100,000 sq. ft. of land with godowns with storage capacity of 50,000 tons of cargo. At Kowloon: Three wharves, and 414,000 sq. ft. of land with 1,620 ft. of harbour frontage and godowns of 65,000 tons capacity.

The property acquired from the P. & O. Company consisted of one wharf and 160,000 sq. ft. of land at West Point, and 10,000 sq. ft. of land at Kowloon.

The year following saw the acquisition of the foreshore in front of the Sailors' Home, adjoining the Company's property. The Company, therefore, carried out a similar reclamation on which godowns were built. The old property was then sold.

In 1889 the total storage capacity of the Company's godowns was for 115,000 tons. There were four wharves, the longest being 475 ft. At present (1936) the storage capacity is 400,000 tons. The berthing accommodation consists of six wharves up to 800 ft. in length, and the total area of property is 1,200,000 sq. ft.

During 1935, 1,020 steamers berthed at the wharves, and landed 818,733 tons of cargo. This was a record year for number of vessels to use the wharves. The year 1929, however, was the record for cargo landed, when it was over a million tons. The largest ship to berth during 1935 was the "Empress of Britain," of 42,300 tons and 733 ft. in length.

It is of interest to note that on one day the following vessels were alongside the wharf:—

No. 1 Wharf:	"Kitano Maru"	7,952 tons.
	"Empress of Japan"... ...	26,032 "
" 2 "	"Chichibu Maru"	17,498 "
	"Heiyo Maru"	9,816 "
" 3 "	"Helmspey"	4,740 "
	"President Harrison" ...	10,504 "
" 4 "	"General Lee"	4,611 "
	"Terukuni Maru"	11,931 "
" 5 "	"Tilawa"	10,006 "
	"President Jackson" ...	14,124 "
		117,214 tons.

Floating craft comprises 10 launches and tugs and 105 lighters.

The authorised capital of the Company is now $8,000,000, and accommodation and equipment have kept pace with the rapid advance of sea-borne traffic.

It will be seen from these figures that since its inception the firm's business has advanced steadily and progresssively, and the Hong Kong and Kowloon Wharf and Godown Co., Ltd., can rightly claim to have played no small part in the development of the Port of Hong Kong.

It is unfortunate that the Royal Navy have the victualling yard, camber, etc., adjacent, which makes it impossible to build more piers on a site near to those belonging to this Company; other plans have been suggested.

Messrs. Alfred Holt and Co., Ltd., have, on the Kowloon side their own berthing accommodation and godowns. Blue Funnel vessels from Europe or America are usually to be seen alongside their piers.

The wharves are equipped with travelling cranes, electric trucks, etc., and are specially designed to facilitate the rapid delivery of cargo immediately after discharge. Large transit sheds give protection to cargo during the period of free delivery.

A large fleet of tugs and lighters is maintained for the conveyance of cargo at special rates to any points within harbour limits. Heavy weights can be readily handled, and provision is made for safeguarding valuable cargoes. The wharf at Hong Kong is connected by a special siding with the Kowloon-Canton Railway, and cargo can be delivered direct to railway cars.

A special feature has been made of accommodation for prolonged storage of consignees' cargo. Particulars of capacity are given below. The warehouses are of steel and reinforced concrete design, equipped with electric light, elevators and an efficient fire-extinguishing apparatus, controlled in each case from a private power-house situated on the property. Special attention is given to ventilation and the prevention of damage by damp or vermin.

In Hong Kong the wharf frontage is 1,000 ft.; wharf area 108,000 sq. ft.; storage accommodation—one 5-storey, four 4-storey, two 2-storey warehouses; floor area 260,000 sq. ft.; capacity 25,000 tons.

By special appointment of the Governor-in-Council, the Company's warehouses are constituted King's warehouses for the storage of dutiable goods and sugar.

Ample bunkering facilities are provided in Hong Kong Harbour from private stocks of coal of about 60,000 tons. About one-third of this is North China coal; the remainder comes from Japan and Formosa.

Oil fuel for commercial bunkering is available, the average stock being 55,000 tons. Delivery is from 600 tons an hour from wharf and 350 tons an hour from lighters. There are 13 water-boats, carrying water from Government reservoirs, each carrying from 200 to 270 tons. Considerable stocks of fuel, stores, etc., are kept by the Admiralty in Hong Kong.

Three famous oil companies have large storage tanks in Hong Kong for the supply of fuel oil to ships.

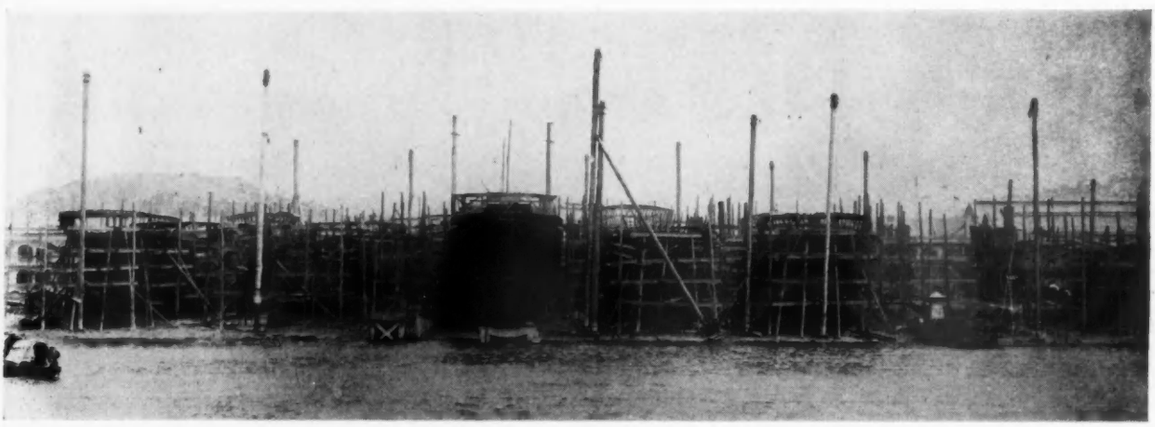
Naval Considerations.

Although "shipping is the life blood of the Colony," the development of the port is affected by defence considerations. Commerce usually has to give way to the requirements of the Navy and Army. That, naturally, has caused difficulties at times almost of a personal nature. In the early days, when no one saw the possibilities of the great increase in the volume of mercantile shipping, the Royal Naval authorities built a

A View of the Taikoo Dockyard and a portion of Hong Kong Harbour.

Port of Hong Kong

Slipways, Stores, No. 3 Dock, General Office and No. 2 Dock, Hong Kong and Whampoa Dock Co., Ltd.



Eight Steel Vessels under Construction in West Yard, Kowloon Docks.

A View of the Taikoo Dockyard showing Canadian Pacific S.S. "Empress of Canada" in the Dry Dock.

Port of Hong Kong—continued

dockyard in what is now the centre of the City of Victoria. It occupies a valuable sea frontage. A considerable section of the stream adjacent to this dockyard is reserved for moorings for naval vessels. During the winter months Hong Kong Harbour accommodates the whole of the China fleet.

Reclamation Schemes.

Owing to the steep hillside on the North side of the island, the commercial section of the City of Victoria has been built on ground reclaimed from the sea. The first few acres had been filled in by 1856. In 1868 some 8½ acres were added, and more in 1874. In 1886, 23 and in 1896, 22 acres were reclaimed. In 1903 some 65 acres of the (now) western section of the city were filled in. In 1925-1928 about 100 acres were reclaimed at East Point.

Further East another reclamation, initiated by a Chinese but carried out by Government, reclaimed about 25 acres at a cost of about two million dollars, providing a quay wall 1,800 ft. long.

There have been very large reclamation schemes carried out on the mainland; that for the aerodrome, when completed, will total about 180 acres.

A recent reclamation at Shamsupo, used at present by the defence force, is about 60 acres.

The gross annual assessed rental of Hong Kong and Kowloon in 1860 was $873,538; in 1917 it was $14,282,186; in 1934 it was $38,981,273.

Harbour Ferries.

In addition to the frequent service of small steamers to Canton —100 miles up the river from Hong Kong, and to Macao, 40 miles south by sea—there are numerous power-driven ferries plying in the harbour. The oldest is the service crossing direct from the island to Kowloon to the nearest point on the mainland opposite Victoria. It is managed by the "Star Ferry Company, Limited." The service has grown year by year, and since 1924 it has been necessary to build an entirely new fleet of six vessels, each with accommodation for over 500 passengers.

In the early days the ferries made 147 crossings a day and carried an average of 3,000 passengers a day. At the present time (1936) 278 trips are made, and approximately 28,000 persons travel daily.

The first ferry landing at Kowloon was at a jetty between the wharves belonging to the Hong Kong and Kowloon Wharf and Godown Co. Later, the landing was moved to the site of present Public Pier site. This was built at right angles to the praya, which made it difficult for the ferries to get alongside owing to the strong cross tide running. It was also very exposed to winds in winter sweeping down Salisbury Road, there being no shelter or protection for passengers arriving and leaving by rickshaws. The 1906 typhoon accounted for the wharf, and a new one was constructed in the same position.

In 1913 the terminus moved to the present position where a new wharf had been constructed. On the Hong Kong side a new pier was built in 1911 on the original site.

Mention must be made of the Yaumati Ferry Co., Ltd., organised and managed entirely by local Chinese. This concern runs the vehicular ferries across the harbour, and two other ferry services to points on the mainland in British territory. In addition to the large number of vehicles ferried, the Company carries about 40 million passengers a year, i.e., about 100,000 a day.

Other local ferry services are managed by Chinese. The vessels are usually crowded; the fares are cheap, maintenance not very good, but the traffic seems to bring good returns.

The total number of passengers moving to and from Hong Kong Island to the mainland, Canton, Macao, etc., in small steamers must be from about 150,000 to 200,000 a day.

There are about 500 steam launches, motor boats, etc., at work in the harbour, used for passengers and towing purposes. Sampans do a considerable amount of passenger transport.

Shipbuilding and Ship Repairing.

In the early days of British trade with Canton, for about two centuries, until 1831, the East India Company held a monopoly from the "home" Government. Their ships discharged and loaded cargo at Whampoa, about forty miles up the Canton River, into junks. It was therefore natural that efforts to effect any repairs were first made at Whampoa—in Chinese territory. There were, however, many difficulties, due to Chinese officials and local labour.

As Hong Kong developed, efforts were made to establish ship-repairing facilities in the Colony.

There are now two large Dock Companies with dry docks capable of taking vessels up to 750 ft. on the blocks. The docks have a depth on the sills up to 34 ft. 6 ins. H.W.O.S.T. There are also five patent slipways capable of handling ships up to 325 ft. long and 3,000 tons displacement. A number of smaller yards, all but one being owned by Chinese, execute repairs for, and build, small craft.

The chief dock companies have splendid facilities for effecting extensive repairs and for the construction of ships of large tonnage. Their equipment compares favourably with similar establishments in Great Britain. Local wages for Asiatics are cheap, but a large European supervising staff is needed. All material used in construction and repair of ships is imported. Tugs and an up-to-date salvage plant are available.

The Hong Kong and Whampoa Dock Co., Ltd., commenced its activities with the acquirement of the Mud Docks at Whampoa, in July, 1863. In October, 1865, it took over the Lamont and Hope Docks at Aberdeen on the South side of Hong Kong Island, then the property of a Mr. John Lamont, and in October the following year the Company was registered under the Companies Ordinance in Hong Kong.

View of Channel with portion of Kowloon City (upper part of picture) and buildings in City of Victoria (lower part of picture).

In 1870 its scene of operations was extended to Kowloon, where it acquired a share in the property on which the now existing Nos. 2 and 3 Docks are situated. Further expansion took place at Kowloon in August, 1877, when two slipways were laid down, and in 1880 the Company bought the property now known as the Cosmopolitan Dock at Shum Shui Po, on the mainland.

To provide increased facilities for docking the ships of the British Navy, the construction of the present No. 1 Dock was commenced in 1882, and completed in 1888, making the Company at that time the largest British establishment of its kind outside the British Isles.

There are now six dry docks, two slipways for docking and repairs, and building accommodation capable of laying down ten ships at one time, several of which could be 700 ft. long.

The Kowloon establishment has a sheltered sea frontage of 3,000ft., with ample accommodation for berthing vessels alongside and mooring buoys at convenient distances from the jetties. The berth at East Yard has a depth of water of 40 ft., this berth being contiguous to the deepest part of the harbour, Lyemum Pass excepted.

Before the construction of the Admiralty Dock in H.M. Dockyard, the Hong Kong and Whampoa Dock Co. docked all the vessels of the British Navy on the China Station, including the old ironclads such as H.M.S. "Iron Duke," at Aberdeen, and later records show, amongst many others, H.M.S. "Terrible," the flagship of the China Fleet. One of the largest jobs of the older days was the refit of H.M.S. "Glory" at Kowloon. Coming to the present day, we find the largest ship docked is the magnificent "Empress of Japan."

The building yards already referred to are well equipped with all modern appliances and machinery for shipbuilding.

The total of vessels built now number 766, ranging from racing yachts and motor craft to passenger liners, standard war vessels, and tankers of 8,400 tons deadweight.

The workshops consist of engine, erecting and machine shops, boiler shop, forge and smithy, iron, brass and steel foundries, coppersmiths and plumbers; brass finishers, pattern making and electrical shops, sawmill and joiner shop, all of which are

Port of Hong Kong—continued

efficiently equipped with the most up-to-date tools and machines for work of every description.

A special note should be made regarding cast steel. The metallurgy of steel is the most complicated and highly technical of any branch of the science, and their products have so advanced in quality that the Dock Company is on Lloyd's list of approved makers of steel castings. A highly-trained steel metallurgist is employed, and the Company is equipped both with staff and plant for producing special steels.

Welding by electric or oxy-acetylene processes is also a feature of the Company's activities, and can be undertaken either in their shops or on ships, or elsewhere.

Diesel engine and turbine machinery, erection and repairs, receive the special attention of experts in such work. Twenty vessels for service in Philippine waters have been built and fitted with Diesel engines since 1926. In 1929 the entire engines were removed from the motor-ship " Raby Castle," of 4,996 gross tons, for an extensive repair, and refitted again, the operation being practically repeated a short time ago.

Sailing Yacht "Tai Mo Shan" in No. 3 Dock, Hong Kong and Whampoa Dock Co. Ltd. This vessel was built and designed in Hong Kong and sailed across the Pacific, Panama Canal and Atlantic to England.

The heaviest boiler built at Kowloon Docks weighed 78 tons.

The sawmill and joiner shops are well equipped for special features in woodwork. Part of the wood furnishings in the Hong Kong Hotel, Gloucester Building and Peninsula Hotel testify to the high class of work turned out by this Company.

Salvage and fire-fighting work is also included within the scope of tthe Company's undertakings. The large ocean-going tug, " Henry Keswick," is specially fitted for such work, and a very experienced salvage diver and special Chinese divers are kept ready for service at short notice.

Finally, a word on the staff. Around a nucleus of the older Europeans, whose names are household words in Hong Kong, is built up a younger, active and keen generation who will, in the course of time, leave their marks as their fore-runners have done before them. Repairs are carried out with skill and expedition, and the designing and building of special craft, fire-floats, double enders, tugs as well as the larger coasters, liners and tankers, is looked after by men highly trained in their particular branches.

Thus led, the competent and industrious Chinese artisans turn out work which is a continual source of satisfaction to clients and pride to the Colony.

This old-established Company is one of the largest dry docking shipbuilding and ship repairing companies in the British Empire outside Britain itself, its ground covering a total area of 96.49 acres, of which the Kowloon establishment occupies 68 acres.

From this Company grew up most, if not all, of the other companies dotted over the Far East, and wherever one goes, Sandakan, Singapore, or nearer home, there will be found Chinese workmen who were trained by the Hong Kong and Whampoa Dock Company before they migrated.

The Taikoo Dockyard and Engineering Company of Hong Kong, Ltd., is probably the most important industrial concern in the Colony. The dockyard is situated on the island. It is a thoroughly up-to-date and efficiently-equipped shipyard and engineering works.

The granite dry dock, constructed to British Admiralty requirements, has an extreme length of 787 ft.; the length on blocks is 750 ft.; the width at the coping is 120 ft.; the width at entrance 93 ft. 4 ins. at the top and 89 ft. at the bottom; the depth of water over the centre of the sill at high water (ordinary spring tides) is 34 ft. 6 ins. To provide for smaller vessels there are three slipways, the largest of which can take steamers of up to 4,000 tons displacement.

The berthing quay wall is 3,200 ft. long, and for the greater part of its length there is a depth of water of 40 ft. The establishment is well provided with a system of railways, travelling cranes, overhead and stationary cranes, for transporting heavy material, the largest cranes having a lifting capacity of 100 tons.

The shipbuilding yard is complete with all modern plant; vessels of all classes and sizes have been built, up to the s.s. " Rhexenor "—dimensions: 452 ft. by 58 ft. by 35 ft. 3 ins. (gross tonnage 8,030). The yard has a special staff of expert designers, and is in a position to undertake shipowners' requirements in a very wide range of craft.

The main workshops cover over six acres of ground, and comprise erecting shops, heavy and light machine shops, boiler shop, forge and smithy, iron and brass foundries, coppersmiths' shop, etc.

The machine shops are equipped with the latest type of machine tools for building and repairing engines up to the largest sizes; there is also a complete equipment of machines and tools for building both " Parsons " and " Brown-Curtis " turbines, which the Company builds under special license from Messrs. Parsons.

Special features of the works are the iron and brass foundries. All work in these departments is under the care of a metallurgical chemist. In the iron foundry special high-grade heat resisting castings are produced, the Company being makers under licence of " Lanz Perlit " iron, which is a hard, easily machined, high tensile iron particularly suitable for the high temperatures and pressure met with in internal combustion and superheated steam machinery.

The boiler shop has a very complete plant for building marine and land boilers, up to the largest sizes; and plates, up to 30 ft. long and 2 ins thick, can be dealt with there. The Company has a large number of the most modern electric-welding plants, and undertakes extensive work by this process as well as by oxy-acetylene gas, either at their yard or on clients' ships or premises.

The Taikoo Dockyard are also special licensees to build Sulzer Diesel machinery in collaboration with the Patentees, and have special modern plant for dealing with building and repairs to Diesel machinery, and a staff with special experience in such work.

The Company possesses a powerful salvage tug with complete salvage gear, and expert salvers.

The Company undertake the overhauling of all types of vessels, and the rapid handling of repairs has been made a special feature.

In common with the rest of the world, Hong Kong has experienced, in recent years, disappointments in connection with shipbuilding. During the war, in the first seven months of 1917, four ships were launched from Hong Kong slips, totalling 18,700 tons. The Blue Funnel " Autolucus," built locally of imported steel, was 8,200 tons dead-weight. In these days China Coast vessels and small ships for river services, etc., are built, but the bulk of the work done in the local yards is in connection with ship repairs. It may be of interest to add that, since Hong Kong is a terminal port for the trans-Pacific run, Japanese and American, as well as British liners, are refitted in Hong Kong.

The firm of W. S. Bailey and Co., Ltd., Shipbuilders, Engineers, and Repairers, which has been established since 1900, has its office and works at To-Kwa-Wan, in Kowloon Bay.

Shipbuilding berths cover a sea frontage of about 550 ft., and on occasion no fewer than 21 vessels of various sizes were on the stocks over this frontage.

Ships up to 200 ft. in length can be built at this yard, and amongst the early successes of the Company can be mentioned " Kwong Sai " and " Kwong Tung," two Canton to Hong Kong steamers built in 1903, and still maintaining a daily service between these ports.

Of some 300 vessels completed, almost every type of craft is represented, ranging from passenger ships to sailing yachts,

Port of Hong Kong—continued

and including gun-boats, fast patrols for Police and Revenue Departments, tugs, cargo vessels, harbour launches, both luxury and utility, oil tankers, oil lighters, cargo lighters, bucket and grab dredgers, passenger ferries, and pontoons equipped for rock drilling, concreting, pile driving, etc., etc. Steel ships, wooden ships, motor ships and steam ships are all represented in the above list, and a competent European designing staff is employed, capable of dealing with any class of enquiry.

The shipyard is well equipped with the necessary machinery for handling this work.

The machinery in all departments is up to date, and the workmen are highly-skilled men working under European supervision.

Marine engines and boilers have been constructed for many of the ships built in the yard.

Forging of all descriptions, from crank shafts to eye-bolts, can be manufactured. Experienced fitters are employed for installation and assembly work of every kind. The foundry is capable of supplying castings of iron up to five tons and brass up to one ton.

Constructional work is also undertaken, and of the varied classes of work coming under this heading, Messrs. Bailey and Co. have had large experience in making and erecting steel buildings and godowns, wharves, roof trusses, bridges, derricks, oil tanks, mooring buoys, railway coaches, and motor buses and lorries.

For repair work, this yard is most up to date. The No. 1 Slipway has been entirely re-built and enlarged after 30 years' continuous service, and is now capable of slipping vessels up to 130 ft. in length, and 400 tons displacement.

No. 2 Slipway can take vessels up to 200 tons displacement, whilst No. 3 Slipway will accommodate ships up to 300 ft. in length and 3,000 tons displacement.

The fitting-out wharves are alongside the slipways, and have a depth of water of about 13 ft. at low tide. Ships anchoring in Hong Kong Harbour whilst undergoing repairs afloat are served by the Company's launch. Amongst the larger repair and reconditioning work carried out, the Douglas Company's steamer "Hai Ning" is an achievement of which Bailey and Co. can feel proud.

Shipping in Hong Kong.

For ninety years the P. & O. Company has continuously carried out the British Government Mail Contracts for the Far East. The mail service was extended to Shanghai in 1857, and to Japan in 1859. In 1857 the largest class of steamer in the service was that of the s.s. "Ottawa," of 1,274 G.R., with 200 h.p. To-day the largest P. & O. ships on the China coast are as much as 17,000 tons register, and 15,000 h.p. In 1857, the 40 steamers, exclusive of transport, store and coal ships, totalled some 70,000 tons register and 18,000 h.p. The total tonnage of the fleets now forming one integral part of the P. & O. undertaking is no less than 1,800,000 tons. The P. & O. Company sent out the pioneer of ship repairing to Hong Kong.

Messrs. Jardine, Matheson and Co. were running ships to China in 1857. They are general managers for the Indo-China S. N. Company. The red funnel steamers of this firm are to be seen in all of the ports of the Far East, from Teintsin to Manila, Samarang and Singapore, and westward as far as Calcutta. The firm of Jardine, Matheson and Co. have been for so long associated with the Far East that they may claim to be the senior British trading firm in China.

It was in 1891 that the Canadian Pacific Railway Company was organised, and almost immediately the enterprising management placed steamers on the Pacific. The well-known "Empress" boats have been running between Hong Kong, Japan and Vancouver ever since. The blue riband of the Pacific is now in the hands of this firm, for the turbine-driven "Empress" steamers are the fastest ships on the Pacific Ocean.

The growth of the Japanese mercantile marine during the past forty years has had, of course, a marked influence on the shipping in Hong Kong, and on the China Coast. The rapidity with which Japan has developed its trade in all directions is astonishing.

The Nippon Yusen Kaisha opened an office in Hong Kong in 1893, when the Yokohama-Bombay Line, the first ocean service of the Company, was established. This well-known shipping company runs ships from Japan to London, and from Japan to Australia, to Vancouver, Seattle and New York. In 1935 the fleet consisted of 133 vessels of 770,000 tons. Many of these pass through Hong Kong.

The Osaka, Shosen Kaisha (O.S.K.) have ships calling at Hong Kong, which run between Java and Japan, and Adelaide and Japan. They have also a Bombay line, a South American line and a service between this port and Victoria (B.C.), Seattle and Tacoma.

Sixty years ago there were many American sailing ships in Hong Kong, but the first American steamer to commence a regular service was the "Colorado" (Pacific Main Co.) in 1867. Nowadays the "Dollar" and "President" vessels are frequently in Hong Kong Harbour.

French, German, Italian and Swedish lines for the Far East add considerably to the tonnage passing through Hong Kong.

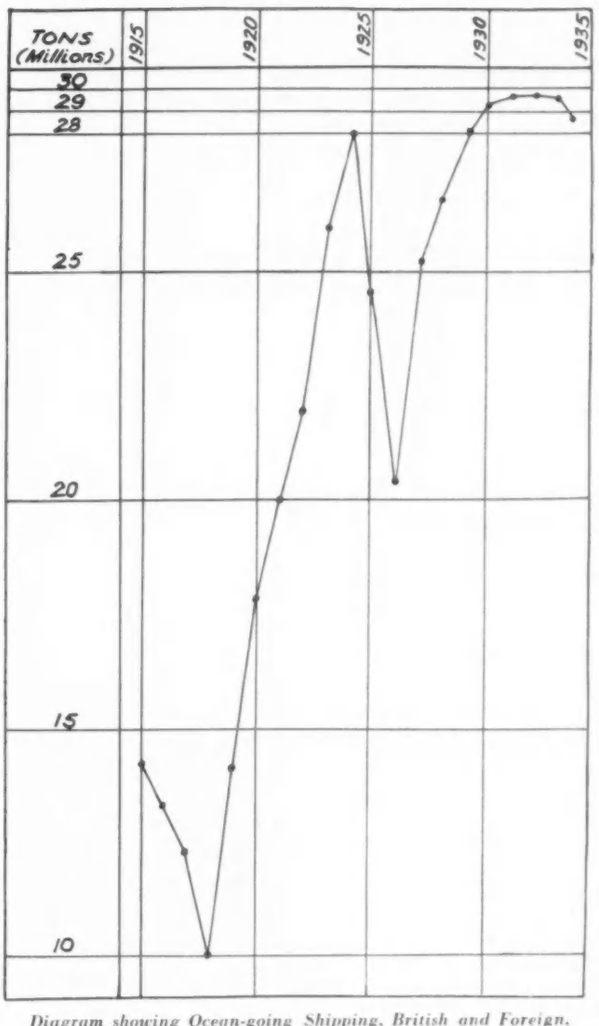


Diagram showing Ocean-going Shipping, British and Foreign, entered and cleared, 1915-34, in Hong Kong.

A Fair Field for all Nations.

It is generally admitted in European commercial circles in the Far East that the trade of all nations has benefited immensely through the development of this port by British enterprise. The ships of all nations receive just the same facilities, and pay the same charges, as those that fly "the red duster." In the local dockyards Japanese, American, Dutch, Norwegian and Chinese-owned ships may be seen under repair. An American commercial publicist recently wrote as follows:—

"Hong Kong is the greatest distributing port of the world for South China, as Shanghai is for North China. Owing to its strategic position as a commercial centre, and a naval and military base, the international importance of Hong Kong cannot be ignored. Its importance in relation to the Philippines will be realised more and more during the Philippine commonwealth period.

"The English have a saying: 'What we have we hold.' Unless the Philippines become a part of the British Empire it will not be surprising that, because of the British desires to hold and keep Hong Kong to maintain its influence in the Far East, the United States will be persuaded by the British, and other European powers with possessions in the Far East, to remain indefinitely in the Philippines to preserve the status quo and balance of power."

Proposals for Port Development.

A comprehensive scheme of new works recommended for construction was drawn up by the Port Engineer (Mr. Duncan) in 1924, but many of the items were very costly and have not been carried out. They are of interest, however, in showing what may be done at some future date.

Port of Hong Kong—continued

It was considered that 17 additional berths would be required for the more economical handling of the import trade of the port, but it would be necessary to " hurry slowly " to make sure of satisfactory returns on the capital expenditure.

On the island site of the harbour it was proposed to develop the North Point foreshore for suitable berthage. Various objections have since been raised, and the scheme is unlikely to be carried out unless there is a big revival in the trade of the Colony.

A Rival Port to Hong Kong.

From time to time plans are suggested for the construction in China of a port as a rival to Hong Kong. At present none of these plans have materialised. The latest scheme published (1936) is being considered by the Government of the neighbouring Chinese Provinces of Kwangtung; the Province is about the size of England and Wales.

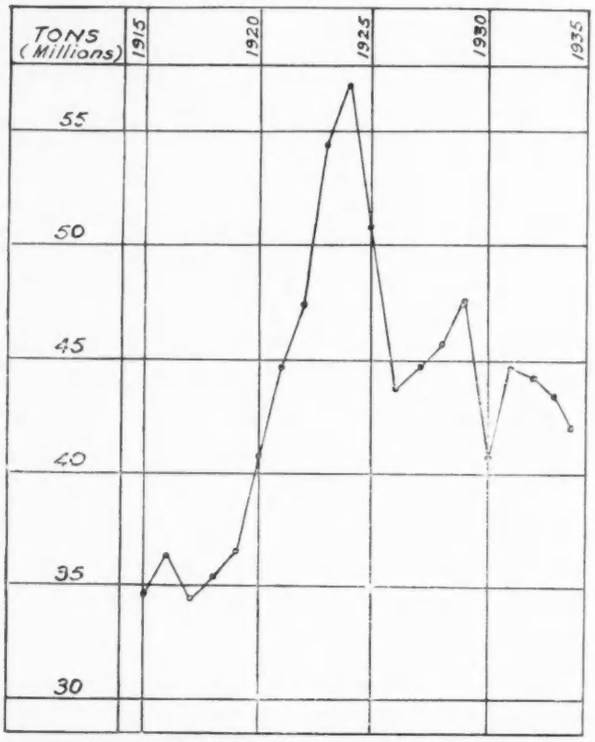


Diagram showing Total Shipping, all classes, 1915-34, in Hong Kong.

In July, 1935, Mr. G. A. Van Steenbergen, C.E., was directed to study the conditions of Canton Harbour. The financial and technical difficulties to be surmounted are by no means negligible, and will be discussed in a later contribution. Mr. Van Steenbergen has recommended extensive works.

The proposal is to make a deep-water port at Whampoa, on the Canton River, so as to link it up with the Canton-Hankow Railway.

The expense is estimated at about four million dollars (Hong Kong currency), but that figure at the present rate of exchange is only about £250,000, and obviously is sufficient only for preliminary work. The difficulty of Chinese Provincial Governments financing any of these schemes is almost insuperable. In any case, it is unlikely that ocean-going liners would go out of their direct route instead of calling at Hong Kong. Coasting steamers can reach Canton, so that a port at Whampoa would not attract them. The real inspiration of the proposals seems to be due to nationalistic feelings amongst those Chinese politicians who do not favour the possession of Hong Kong by the British.

Mr. Van Steenbergen writes:—" In one respect Hong Kong will always be superior to Canton, that is, as regards the fast passenger traffic. Passenger traffic all over the world is attracted to those places which project out from the land into the ocean. Such places are attracting the fast passenger traffic . . . ." The train journey from Canton to Kowloon takes three hours, as compared with eight hours by steamer.

Hong Kong, as a free port, has an important advantage over Canton with a harbour within Customs barriers. This advantage is particularly valuable where labour costs are low.

Another important advantage is the well-developed banking and other commercial organisations in Hong Kong. At present there is but little confidence in Canton currency.

On the whole, it may be said that, while it is to be hoped that great improvements will be made in the construction of modern harbour works in Canton, the prosperity of Hong Kong as a port depends much more on political rivalries in the Far East than on any new harbour works in, or near, Canton.

The Air Port.

No description of port development in Hong Kong would be complete without a reference to the Air Port. In 1934 the total expenditure, excluding work undertaken by the Public Works Department (buildings, reclamations, etc.), and the salary of the Director of Air Services (who is the Harbour-master) was $50,957. There were 1,951 flights of civil aircraft, 3,170 passengers being carried. The Far East Flying Training School has about 40 engineering students, mostly Chinese under instruction, and some Chinese flying students.

A weekly air mail service from Penang to Hong Kong was inaugurated in March, 1936. Civil aviation is making progress in the Far East as elsewhere. Large hangars have been erected on the aerodrome (at Kai Tack) in Hong Kong, where there is a slipway for hauling flying boats up to the repair shops. It cannot be doubted that, in the scheme of Imperial defence, fast flying boats would make a rapid passage from Singapore to Hong Kong, and in emergency find the aerodrome of great value.

Policy and Administration.

The control of shipping in the harbour is under the local Government. The Harbour-master (the Honourable Commander G. F. Hole, R.N.) is a member of the Legislative Council.

All port development work is under the general supervision of the Director of Public Works, who is a member of the Executive and Legislative Councils. A sub-department of the P.W.D. is concerned solely with port development; the Engineer-in-Charge is Mr. Anderson, who is assisted by a staff of four European engineers and Asiatic assistants. Acknowledgment must be made for help and the courtesy given by Mr. Anderson, who replied to many enquiries addressed to him by the writer.

Mr. Duncan, in his 1924 Report, was emphatic that " a properly constituted Advisory Port Authority, Board, or Imperial Tribunal is the first need." The report of the Economic Resources Committee in 1920 had also recommended such an authority.

Mr. Duncan stated his reasons, which are well worth noting, although his recommendation for such an authority has not been carried out. Yet every one connected with the shipping industry must agree with his conclusions. He wrote as follows: " To enable the Government to appraise intelligently the needs of the port, the Board should study and observe traffic, and port conditions, and advise and make recommendations as to whether the results of these studies indicate the desirability of greater channel accommodation by deepening the fairways, the provision of berthage, increased storage space, road and railway transport facilities, bunkering, ship repair and dry-docking facilities; change in the disposition of buoys, lights, etc.; modification of the tariffs, or advise in any matters which concern the efficient working of the port."

He was of opinion that private companies could not be expected to meet the cost of development works necessary to secure true efficiency and economy in the handling of cargoes, as the return on the capital cost is subject to trade being handled over the works constructed. It must be remembered that the port facilities in Hong Kong are not only in the service of the Colony but of South China, and of the many ports with which the commerce is interchanged.

The Harbour-master, the Port Engineer and other Government officials, would, of course, be members of any Board constituting the Port Authority, together with representatives of shipping interests.

Of course, private enterprise is to be encouraged, and should be required to provide the shed, cargo handling and all other facilities. But care should be taken in granting leases for the use of piers and wharves so that a lessee may not keep his wharf idle rather than permit its use by an actual or potential competitor. Nor should he be allowed to make such high charges as to drive business away from the port.

It seems desirable that the Government, which can always raise money for loans on better terms than companies, should provide the costly works and lease them out on reasonable terms. But the commercial people would use their energy and ability in the administration of all business matters connected with the shipping of the port.

It cannot be doubted that when the time is opportune, i.e., when existing leases fall (1949), a Port Authority will be constituted.

This completes the story of the development of this famous Far Eastern port in South China. It is always dangerous to prophecy about the future; it is absurd to make the attempt concerning the Far East where conflicting political ambitions

Port of Hong Kong—continued

of various nations cause so much discord and anxiety. We can only suggest that the great naval base recently created at Singapore, the increase in the fortifications of Hong Kong, and the development of aerial navigation, makes it reasonable to suppose that the British Government have no intention of surrendering this outpost of Empire. But whatever the political future of Hong Kong may be, its geographical position, and its wonderful harbour, gives it an almost unchallengeable future as the most important port in South China. It must always remain one of the largest ports in the world.

Trade Statistics for Hong Kong.

Until recent years there have been available no statistics concerning the trade of this Crown Colony. A reliable local authority has informed me of a curious fact. It is that the origin of the present system of compiling trade returns was a question in the House of Commons which caused the Secretary of State to make enquiries concerning some detail which could be obtained only from trade statistics. When he discovered that the figures were not available he gave instructions that returns of imports and exports were to be made each year. It is said that the system costs the Colony about $60,000 a year, but very few copies of the publication are purchased.

During the war period some returns were compiled because it was very little extra expense to do so. A close watch of imports and exports had to be made in those days to make sure that Hong Kong was not in any way assisting Enemy Powers. Those merchants who supported the idea of statistics succeeded in persuading the local Government to continue the good work until, after a few years, the local Government discontinued it on account of the expense. This explanation is given so that it may be realised that the figures given are not of any great value for comparative purposes.

During 1935 the value of merchandise imported into Hong Kong totalled $365 millions (local currency), according to the declarations made by merchants to the Statistical Department of the Government. That sum represents a decrease, in terms of local currency, of 12.2 and 27.1 per cent., as compared with 1934 and 1933. At the time of writing, there are no signs of any improvement in the returns for 1936.

It may be of interest to note the largest individual items of import during 1935. They were:—

Foodstuffs	$108.02 millions.
Piece Goods	$52.67 ,,
Oils and Fats	$33.97 ,,
Metals	$32.78 ,,
Chinese Medicines	$13.01 ,,
Fuels	$10.62 ,,

Since most of the imports to Hong Kong are destined for South China and adjacent markets, the above items are the largest individual exports.

Exports from Hong Kong of South China produce and manufactures were well maintained in 1935. There were increases under many headings, including wolfram ore, bamboo ware, lard, fire-crackers, canes and feathers.

The unfortunate decline in the value of tea and silk exported from China, articles that once were the most important exports, must be attributed to the political chaos in the country and to the more scientific methods and organisation of industry in competing countries. It is, perhaps, needless to add, that the artificial silk industry has had an adverse effect on silk exports from China.

The following tables show the decline in the value of imports of textiles and woollens from the United Kingdom to Hong Kong. The industrial progress in Japan and in Shanghai has been a big factor, and will probably not decline in progress. On the other hand, machinery, steel, etc., is more in demand.

Imports and Exports, 1923-1934, Hong Kong.

(In £'s and $'s millions)

IMPORTS

1923	1924	1930	1931	1932	1933	1934
£62.0	72.1	29.6	38.5	41.0	33.9	31.7
$544.6	607.7	455.5	737.7	624.0	500.9	415.9

EXPORTS

1923	1924	1930	1931	1932	1933	1934
£51.4	63.6	23.2	28.9	31.0	27.4	21.8
$538.9	536.0	356.8	541.9	471.9	403.1	325.1

NOTE—Average rate of exchange: 1923=2s. 3¼d. 1932=1s. 3⅞d.
1924=2s. 4⅛d. 1933=1s 4¼d.
1930=1s 3½d. 1934=1s. 6 5/16d.
1931=1s. 0½d.

Hong Kong Import Percentages.

The shares of the import trade enjoyed by the more important exporting countries are given below:—

	1930	1931	1932	1933	1934
	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent
China	26.6	26.9	27.2	31.0	35.2
Japan	12.3	9.3	3.4	5.0	8.8
N.E. Indies ...	10.2	10.9	9.9	7.8	8.3
U.K.	9.4	10.6	12.3	10.4	7.8
U.S.A.	7.2	7.8	7.4	6.2	7.1
Indo China ...	8.7	7.1	8.4	8.5	6.3
Siam	5.9	6.4	9.3	10.0	8.0
Germany	4.6	5.1	4.1	3.8	3.3
Malaya (British) ...	2.3	1.9	1.5	1.2	1.3
India	1.5	2.3	2.8	3.7	2.0
Australia	.7	.9	1.9	1.6	1.6
Belgium	1.3	2.0	2.0	1.7	1.2
Others	9.3	8.8	9.8	9.1	9.1

Piece Goods and Textiles.

Imports totalled $66.6 millions, as compared with $75.1 millions, and exports $48.7 millions, as compared with $55.5 millions.

It will be seen from the table below that the United Kingdom share of the import trade steadily declined from 38.6 per cent. in 1932, to 23.9 per cent. in 1933, and 15.5 per cent. in 1934, whilst Japan increased her share from 7.0 per cent. to 9.3 per cent. and 17.3 per cent. respectively, and North China from 36.3 per cent. to 47.3 per cent. and 50.6 per cent. respectively. China and Japan, therefore, accounted for 67.9 per cent. of the total import trade.

IMPORTS (in $'s millions)

	1932	1933	1934
	Per Cent.	Per Cent.	Per Cent.
United Kingdom	41.4 (38.6)	17.9 (23.9)	10.3 (15.5)
Japan	7.5 (7.0)	7.0 (9.3)	11.5 (17.3)
North China	39.0 (36.3)	35.5 (47.3)	33.7 (50.6)
Germany	3.4 (3.2)	2.0 (2.6)	0.9 (1.4)
Italy	1.3 (1.2)	1.5 (2.0)	1.5 (2.3)
France	0.4 (0.4)	0.3 (0.4)	0.2 (0.3)
All Other Countries ...	14.3 (13.3)	10.9 (14.5)	8.5 (12.6)

Hong Kong Shipping and Freight.

The general outlook, and recent financial results, concerning shipping in Far Eastern trade have been depressing to those connected with it. The freight market has been poor, and sugar, bean, coal and salt freights which, until recently, provided tramp steamers with employment when there were no rice cargoes to be had, have been either carried in liners or ceased to exist in recent times.

The table of shipping, and the freight of same, shows the heavy volume of tonnage that is available. But various adverse factors have made business in Hong Kong very difficult. The internal political chaos and terrible natural calamities of huge floods on the Yellow and Yangtze Rivers, together with the aggression of the Japanese, and the rapid increase of tariffs in China, have been the main causes of bad trade, in addition to the world trade depression.

It is hoped that the recent legislation that imposed a managed local currency in Hong Kong will effect an improvement. It has helped in many cases to do so. For Hong Kong—and China—a few months ago, for the first time, abandoned the silver currency to which they had been wedded since foreign trade began in the Far East. The silver buying policy of the U.S.A. practically forced that change of policy.

New Survey Requirements.

If the Hong Kong Government enforces the new scheme of re-conditioning and re-equipping "Existing Ships" with Hong Kong Government passenger licences, to enable them to conform with the rules laid down by the Simla Conference for the Safety of Life at Sea, owners will be faced with a disquieting problem of expenditure. The adverse trading conditions of recent years—year after year—have taxed their financial resources to the extreme. Several steamers have been reconstructed to meet the new requirements, but at the time of writing some owners of other vessels are waiting to see if they will be compelled to reconstruct. If so, some of them state that they will be forced to sell their vessels.

A very big trade is done in carrying rice—of which great quantities are imported to China—from Indo-China to Hong Kong. Shanghai owners have thrown extra steamers on to this market, at low rates which adversely affected Hong Kong steamers. In one case charterers chose to lay up a time chartered steamer until her charter terminated, paying full hire to her owners.

Last month a Hong Kong owner informed the writer that, owing to the low rate of the local dollar (about 1s. 3½d.), he had taken ships off the Far Eastern trade and sent them on more lucrative voyages in the Indian Ocean.

Port of Hong Kong—continued

The transport of Chinese coolies to and from Malaya Dutch East Indies, etc., and South China in past years was a flourishing business, but in recent years has slackened down.

Shippers of rice in 1935 paid Hong Kong owners £950 a month for 4,700 tonners, £900 a month for 4,200 tonners, delivery at Bangkok and re-delivery at Singapore or Hong Kong, on a time charter basis.

In June, 1935, several Chinese and British steamers returned to Shanghai in ballast after having waited in Hong Kong for weeks without employment. Sixteen steamers of all sizes, with a total dead-weight of 55,100 tons, were in Hong Kong Harbour at the end of June, 1935. But by the end of October, 1935, the unemployed tonnage was reduced to a single Chinese steamer of 2,300 tons dead-weight.

Incidentally, it may be mentioned that a portion of the Boxer indemnity funds, remitted to China by the British Government, was spent on purchasing new steamers owned by the Chinese Government. The British taxpayers, it may be remembered, presented the Chinese Government with a sum totalling £11 million sterling a few years ago. The general condition was that the money was to be spent on education, railways and industrial plant for China. All expenditure on materials imported to China (purchased out of Boxer funds) was to be in Britain. The new Chinese-owned ships were, it is true, built in Britain, but they compete with British-owned ships in the Far East. Many British owners feel that the money should have been used for other purposes, such as railway materials.

COMPARATIVE RETURNS FOR HONG KONG SHIPPING AND FREIGHT

Class of Vessels	1912 No.	1912 Tonnage	1913 No.	1913 Tonnage	1931 No.	1931 Tonnage	1932 No.	1932 Tonnage	1933 No.	1933 Tonnage	1934 No.	1934 Tonnage	1935 No.	1935 Tonnage
British Ocean Going ...	3,956	7,779,970	4,210	8,449,533	4,834	11,540,844	5,014	12,201,690	4,815	12,014,232	4,824	12,035,087	5,092	12,510,993
Foreign Ocean Going ...	4,367	8,592,320	4,679	9,272,635	7,014	17,905,301	6,475	17,067,383	6,641	17,354,645	6,253	16,870,439	6,802	18,195,573
British River Steamers ...	6,968	4,197,744	6,624	4,078,635	8,154	8,175,054	8,249	8,216,528	7,989	7,539,280	7,669	7,438,173	7,606	7,504,189
Foreign River Steamers ...	1,938	894,349	1,780	949,328	2,967	1,107,322	2,768	1,096,287	1,986	790,878	1,759	730,579	2,606	779,925
Steamships under 60 tons	3,981	150,612	4,574	189,003	7,211	204,366	7,294	197,757	7,972	203,636	6,547	167,038	6,101	158,638
Junks, Foreign Trade ...	25,593	2,654,275	25,653	2,882,518	21,621	3,000,861	22,559	3,014,360	22,089	2,959,962	16,991	2,812,717	17,946	2,338,163
Total Foreign Trade ...	46,603	24,269,270	47,520	25,821,652	51,801	41,933,748	52,359	41,794,005	51,492	40,862,583	44,043	40,054,033	45,553	41,487,477
Steam Launches, Local Trade ...	411,990	10,609,404	416,438	10,720,604	22,638	743,781	23,348	766,180	22,982	770,289	21,360	727,900	21,601	759,884
Junks, Local Trade ...	30,056	1,856,475	26,270	1,200,726	32,823	1,472,492	28,408	1,264,721	34,148	1,410,509	28,351	1,132,089	27,501	1,226,618
Grand Total ...	488,649	36,735,149	490,228	37,742,982	107,262	44,150,021	104,115	43,824,906	108,622	43,043,381	93,754	41,914,022	94,655	43,473,979

Aden Port Trust

The following are the returns of shipping using the Port of Aden for the month of September, 1936:—

	No.	Tonnage
Merchant Vessels over 200 tons ...	145	574,101
,, ,, under 200 tons ...	3	486
Government Vessels	6	15,789
Dhows	57	2,286
PERIM.		
Merchant Vessels over 200 tons ...	5	5,781

The number of merchant vessels over 200 tons that used the port in September, 1936, was 145, as compared with 157 in the corresponding month last year, and the total tonnage was 574,000, as compared with 637,000.

Excluding coal, salt, fuel oil and Military and Naval Stores and transhipment cargo, the total tonnage of imports in the month was 9,200, and of exports 5,500, as compared with 10,500 and 6,800 respectively for the corresponding month last year.

The total value of imports, excluding Government Stores, was Rs. 52,53,000/-, as compared with Rs. 56,30,000/- for September, 1935, and of exports Rs. 28,71,000/-, as compared with Rs. 34,51,000/-.

The total value of both imports and exports together was Rs. 81,24,000/-, as compared with Rs. 90,81,000/- for the corresponding month last year.

Imports during the month were above those for September, 1935, in the case of raw hides, seeds, raw skins, sugar, white and printed or dyed piece-goods, twist and yarn, unmanufactured and manufactured tobacco; and below, in the case of coffee, grain, pulse and flour, gums and resins, hardware, grey piece-goods, and private treasure.

Exports were above those for September, 1935, in the case of raw hides, sugar, grey, white and printed or dyed piece-goods, twist and yarn, and manufactured tobacco; and below, in the case of coffee, grain, pulse and flour, gums and resins, hardware, seeds, raw skins, unmanufactured tobacco, and private treasure.

TRADE OF THE PORT.

Article.	Unit	Imports Quantity.	Imports Value Rs.	Exports Quantity.	Exports Value Rs.
Coal	Tons	3,236	46,022	0	0
Coffee	Cwts.	8,173	2,16,972	7,914	2,41,535
Grain, Pulse and Flour	,,	51,271	3,13,573	32,607	1,83,899
Gums and Resins	,,	269	7,412	912	16,704
Hardware	—	0	37,801	0	24,847
Hides, raw	No.	11,145	10,467	14,135	26,848
Oil, Fuel	Tons	56,204	13,21,819	2,996	59,920
,, Kerosene	Gls.	1,408	907	648	389
,, Petrol	,,	17,825	17,825	1,848	2,731
Salt	Tons	0	0	5,600	56,000
Seeds	Cwts.	3,636	28,708	489	4,109
Skins, raw	No.	405,866	2,33,506	354,899	3,83,435
Sugar	Cwts.	33,771	1,61,171	27,184	1,30,665
Textiles—					
Piece Goods, Grey	Yds.	3,256,906	3,96,000	2,638,150	3,31,893
,, ,, White	,,	884,046	1,35,151	645,207	90,307
,, ,, Printed or Dyed	,,	1,440,934	2,62,556	1,655,462	3,47,849
Twist and Yarn	Lbs.	149,610	71,825	94,578	42,717
Tobacco, Unmanufactured	,,	264,964	40,560	510,216	1,04,824
,, Manufactured	,,	214,956	2,69,971	94,276	90,405
Other Articles	No. of Pkges.	64,241	14,49,056	14,374	5,19,559
Treasure, Private	—	0	2,31,610	0	2,12,000
Total ...	—	—	52,52,912	—	28,70,636

River Work for the "Queen Mary" *

By A. C. GARDNER, F.R.S.E., Member of the Institution of Engineers and Shipbuilders in Scotland, Engineer, Clyde Navigation Trust

IN 1931, before the contract for the new Cunarder was placed or the dimensions of the vessel fully known, it was realised that by no means the least important of the many questions to be met by her builders, as well as by the custodians of the river, apart from the actual launch, would be the final passage of the ship to sea down the channel of the Clyde. Not only was she the largest vessel to be built on the Clyde, but the largest ship in the world, with a contemplated launching weight greatly in excess of anything previously attempted.

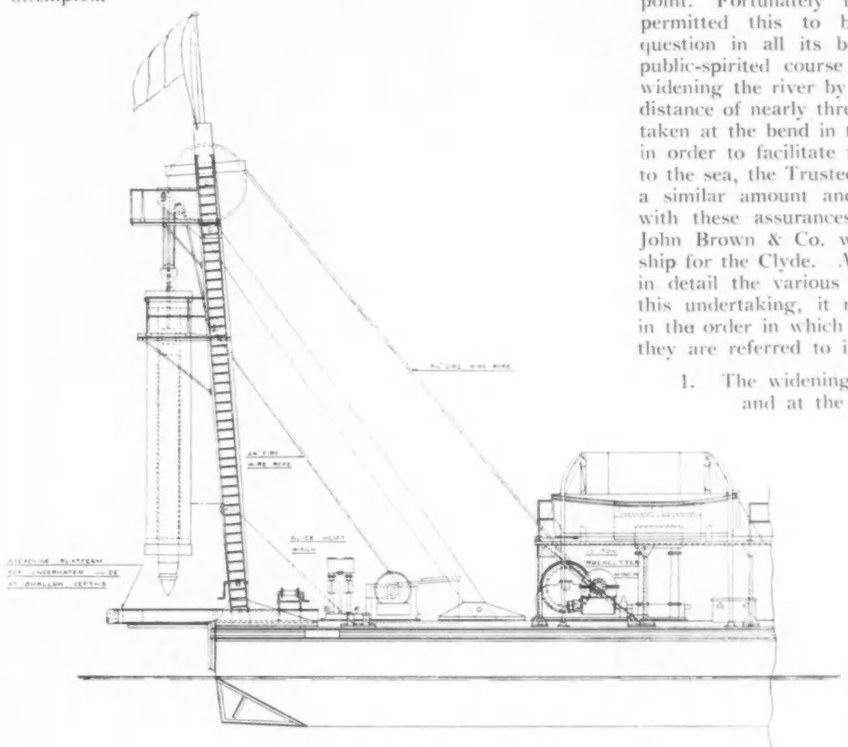


Fig. 2. 10-ton Rock-breaker.

These considerations alone necessitated the greatest care and attention being given to the requirements of the actual launching; but in addition there was the question of the passage of a ship—which, on completion, would have a length of more than 1,000 ft., a light draught of 35 ft. and an exposed broadside surface above waterline of over 90,000 sq. ft.—down a comparatively narrow waterway possessing over the greater part of its course an available depth of 25 to 26 ft. at low water of ordinary spring tides.

After allowing for a normal tidal range of 12 ft. which would have provided the vessel with the requisite flotation at high water, it was considered advisable, in view of the exceptional dimensions of the vessel and the uncertainty of tidal predictions being fulfilled, to embark on a programme of widening and deepening the channel at places where previous experience had suggested its desirability in conformity with the established policy of the Clyde Trust. The decision finally taken to make the journey down the river in one tide, a distance of 15¼ miles, the greater part of which would be traversed on a falling tide and at very low speed, emphasised the need for every provision being made to secure an ample margin of depth in the channel, and for those interested in the river some account of the work carried out by the Clyde Trustees in connection with this great undertaking is perhaps overdue. To those charged with the responsibility of ensuring the requisite depth in the river this presented a formidable task, and many months of dredging were required, during which every available unit of the dredging fleet was employed. Further, during the period of fitting out, estimated to occupy at least 18 months, the vessel would have to lie alongside the launching berth in the builders' basin almost at right angles to the river with traffic continually passing up and down to Glasgow and the sea. This basin had cradled such ships as the "Lusitania," "Aquitania" and H.M.S. "Hood," all famous for their size and tonnage, but in length alone the contemplated vessel was 150 ft. greater that the "Aquitania," the longest of the three, whilst the basin itself, which had been specially lengthened at its inshore end to accommodate that ship, could not be lengthened further.

It appeared, therefore, that if the contract were to come to the Clyde, there was no other course than to widen the river opposite the basin and divert the navigable channel at that point. Fortunately the unoccupied lands on the south bank permitted this to be done, and after consideration of the question in all its bearings the Clyde Trustees adopted the public-spirited course of acquiring the necessary lands and widening the river by 100 ft. westward of the River Cart for a distance of nearly three-quarters of a mile. A similar step was taken at the bend in the river further down at Dalmuir where, in order to facilitate the passage of the vessel on her journey to the sea, the Trustees agreed to widen the river there also by a similar amount and over a distance of one mile. Armed with these assurances which removed their first difficulties, John Brown & Co. were able to secure the contract for this ship for the Clyde. As it is proposed in this paper to describe in detail the various ancillary works rendered necessary by this undertaking, it may perhaps be best to deal with them in the order in which they were carried out. For this purpose they are referred to in numerical order as follows:—

1. The widening of the river opposite to the shipyard and at the entrance to the River Cart.
2. The deep dredging across the river on the line of the launch.
3. The deepening of the fitting-out basin for the reception of the vessel after the launch.
4. The placing of the protective barrage and boom at the stern of the ship whilst fitting out.
5. The widening of the river at Dalmuir.

Some of these works differed only in magnitude from work of a similar character previously undertaken on the Clyde. Others presented novel and interesting features, and it is with these that it is proposed more particularly to deal. The special conditions and technical considerations covering the actual launch of the vessel have been very ably described by Mr. J. M. McNeill in his paper* before the Institution of Naval Architects. He gives the total launching weight of the ship and sliding ways as 36,700 tons, the total distance travelled before the vessel came to rest 160 ft. from the end of the standing ways as only 1,096 ft., and the maximum immersion of the vessel during launching as 38.7 ft. The French liner "Normandie," the largest vessel previously constructed, had a launching weight of considerably under 30,000 tons and is stated to have attained a speed at one part of her travel down the ways of 17 miles per hour. As the normal depth of the river bed in the deep-water channel on the line of the launch was only 25 ft. at low water of ordinary spring tides, the amount of preparatory dredging required for the launch alone was therefore considerable, and involved the removal of some 350,000 cu. yds., or nearly half a million tons of soil.

The widening of the river referred to in items (1) and (5) was carried out by first cutting a V-shaped trench or lockspit throughout the length of the widenings on the line of the proposed new river bank, the landward slope of which formed the natural bed for the stone with which it was to be faced. Before the lockspit was carried down to low water line the stones from the original dyke face were lifted and piled on the intervening ground and when its full depth was attained these stones were tipped into the open trench to its full capacity and allowed to remain there until dredging operations had removed the material in the intervening bank. These operations assisted by the scouring action of the river removed the ground beyond the deep-water channel, allowing it to take up its natural slope when the stones in the lockspit gradually subsided and settled into position on the face of the dyke. When this movement had ceased the stones were packed, levelled up, and grouted

*Paper read before the Institution of Engineers and Shipbuilders in Scotland, and published by their kind permission.

*Trans. I.N.A., 1935, vol. 77, p. 1.

River Work for the "Queen Mary"—continued

to form a finished face. Fig. 1 illustrates the method of forming the new dyke in the manner described.

At one point in the course of dredging away the bank in Work No. 5, rock was encountered at a depth of 18 ft. below low water. A survey showed it to consist of hard whinstone rock intersected with veins of calcite, and extending in an easterly direction from the point where it was first encountered for a distance of some 200 ft. As the widening of the river also involved its deepening to 25 ft. below low water, this presented a formidable obstruction requiring to be entirely removed. As soon as the rock was bared of the overlying clay and gravel, blasting operations were commenced by drilling into the rock, but progress proved to be so slow, by reason of the many interruptions, that it was quickly realised other and more expeditious methods would need to be employed to complete its removal in time. Accordingly, a rock-breaker was chartered and set to work on the ground early in August, 1935. This vessel consisted of a steel barge or pontoon, on one end of which was mounted an A-frame carrying an overhanging pulley operating a 10-ton ram through a guide tube suspended in the water. Although the removal of rock from the bed of the Clyde was not a new problem, the operation was greatly simplified on this occasion by the type of appliance used, and a short account of its construction and performance may not be out of place.

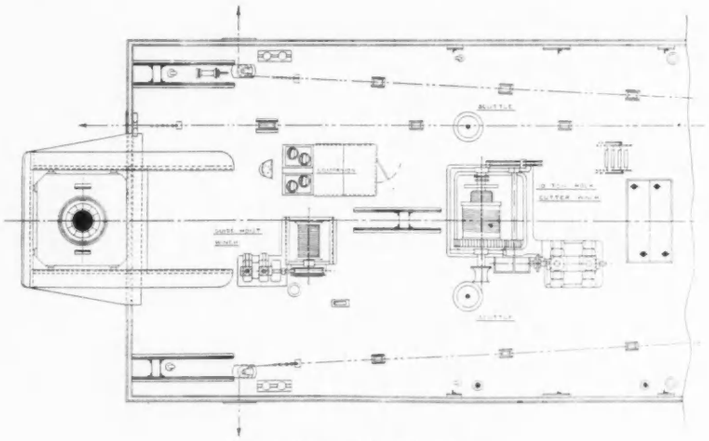


Fig. 3. Plan of Rock-breaker.

The principle of the rock-breaking machine, which was steam-driven, is to shatter the rock by a succession of blows concentrated at one point at a time. When the rock has been thoroughly punished at this point the pontoon is moved and the process repeated on a linear succession of points at predetermined distances apart. When the whole line across the face of the rock has been dealt with, the machine is moved back to a second parallel line and set to work on another series of holes and the broken material subsequently removed by a dredger. The ram itself consists of a cast steel body 20 in. in diameter and 20 ft. in length, weighing 10 tons and fitted with a specially hard steel point which is detachable. Its general arrangement is shown in Figs. 2 to 4 and also the guide tube through which it operates: the latter is lowered by an independent system of pulleys on the frame to the surface of the rock. The machinery and ram were of Lobnitz & Co.'s latest type, and on the work described the holes were spaced 3 ft. apart both longitudinally and transversely on the rock surface, the number of blows averaging 32 per hr. with a fall of 15 ft. of the ram. The average penetration of the rock was 2.28 in. per blow, while the average quantity of rock broken was 1.71 cu. ft. per blow, or 2.03 cu. yds. per hr., and the total quantity broken up by the rock-breaker was 2,000 tons.

Experience of this class of work shows that the harder the rock the better the effects, but when the rock is uneven or when it is conglomerate progress is much slower due to the cushioning effect on the ram. Moreover, the success of the work is largely dependent on the accuracy with which the working points are set out and the appliance handled so as to ensure the concentration of effort at the precise distances marked on the chart. Otherwise it might result in a series of pinnacles being left involving greatly increased difficulty in their removal. Work in the instance described was carried out during the late summer and was attended by marked success. When it was completed the whole area of the rock surface was examined by means of a diving bell, and any isolated points were removed by drilling and blasting.

Reference has been made to the fact that during her fitting out the "Queen Mary" had to lie for the whole of that period practically at right angles to the river with her stern projecting into the fairway. The protection of the vessel against possible damage by passing ships was secured by a floating boom of the form indicated in Fig. 5. This boom, which was a lattice structure of steel and timber, was kept in position by barges moored up and down stream, and was marked with warning lights and a bell and lighted buoy to indicate its position in periods of fog and darkness. But another problem exercised the minds of her builders at this stage and found its solution in an under-water screen or barrage. Whilst lying in the fitting-out basin, the vessel occupied a berth which, on account of her great draught, had to be dredged to a considerable depth below the normal deep-water channel of the river, and the possibility of this berth rapidly silting up was a matter of some concern to her builders. It was therefore resolved to construct a temporary wall or submerged barrage on the bed of the river around the stern of the ship, to act as a screen on the river side of the deep-water berth and prevent the excessive deposition

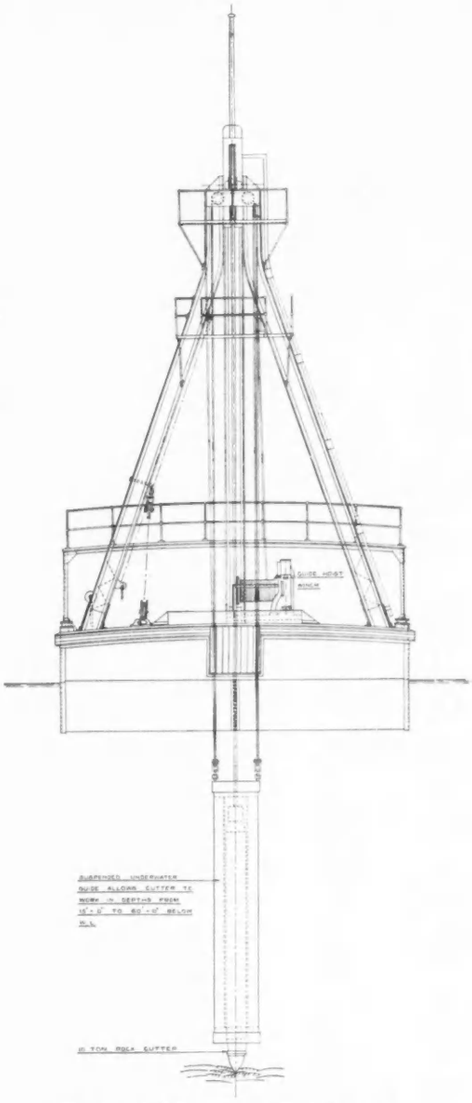
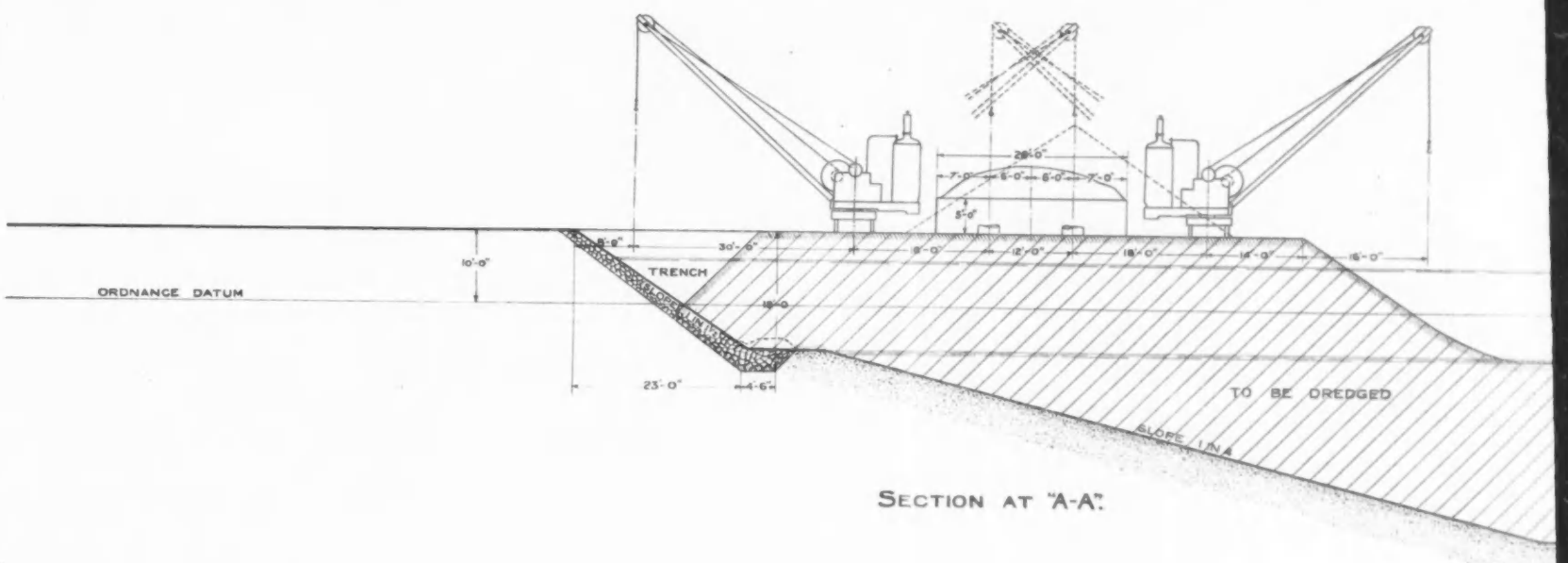


Fig. 4. End Elevation of Rock-breaker.

of silt brought down the river on the ebb tide, which at this point is accentuated by its confluence with the waters of the River Cart. It was, moreover, necessary that whatever form this protection might take it had eventually to be removed to permit of the vessel being hauled out into the channel for her journey to the sea. Any work involving major dredging operations to remove it was ruled out on account of its close proximity to the ship and her propellers. Accordingly, a scheme was devised in conjunction with the builders, and ultimately took the form of a number of steel frames or towers with broad concrete bases placed side by side and in three continuous lines, from which were suspended overlapping steel plates of the full height of the towers and extending as a continuous screen around the stern of the vessel. The general arrangement of the scheme as carried out is illustrated in Fig. 7.

It will be seen from this diagram that, in order to be effective, the towers had to be placed truly vertical and in line in order to ensure proper overlapping and the avoidance of gaps between the screen plates, as the permissible margin of variation was

River Work for



SECTION AT "A-A".

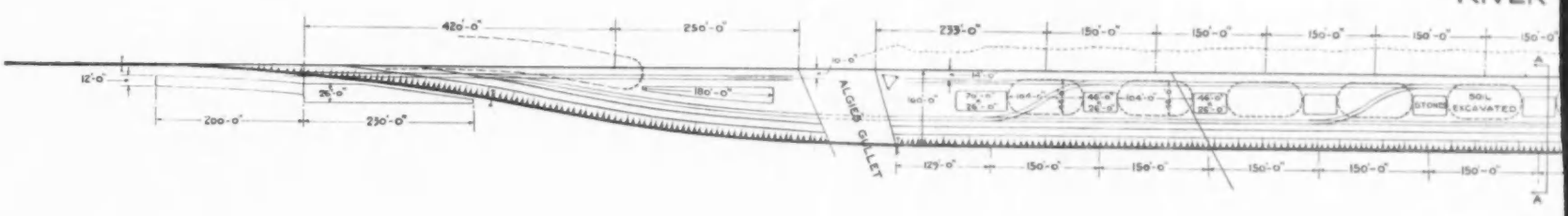


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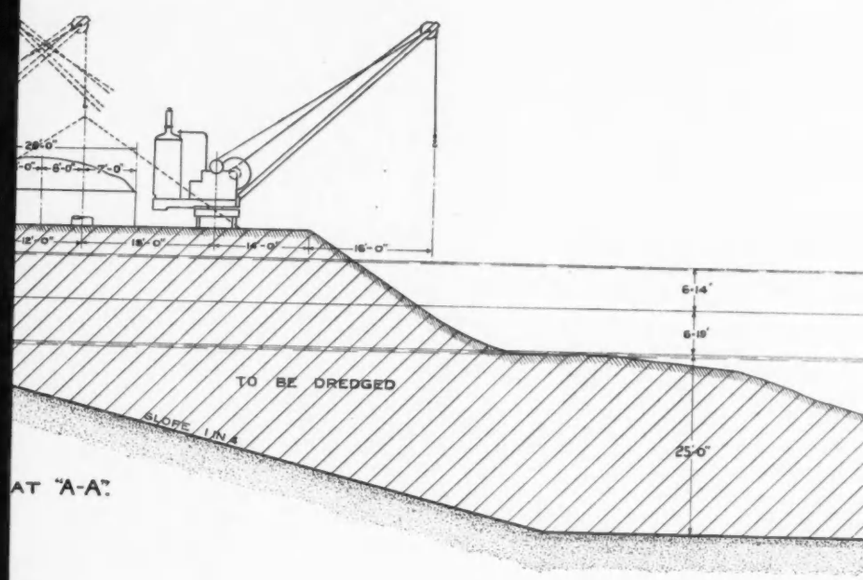
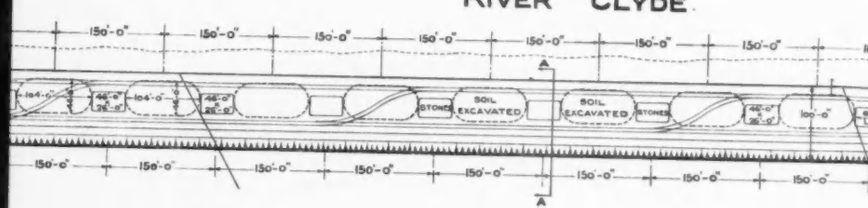
Fig

River Work for the "Queen



AT "A-A".

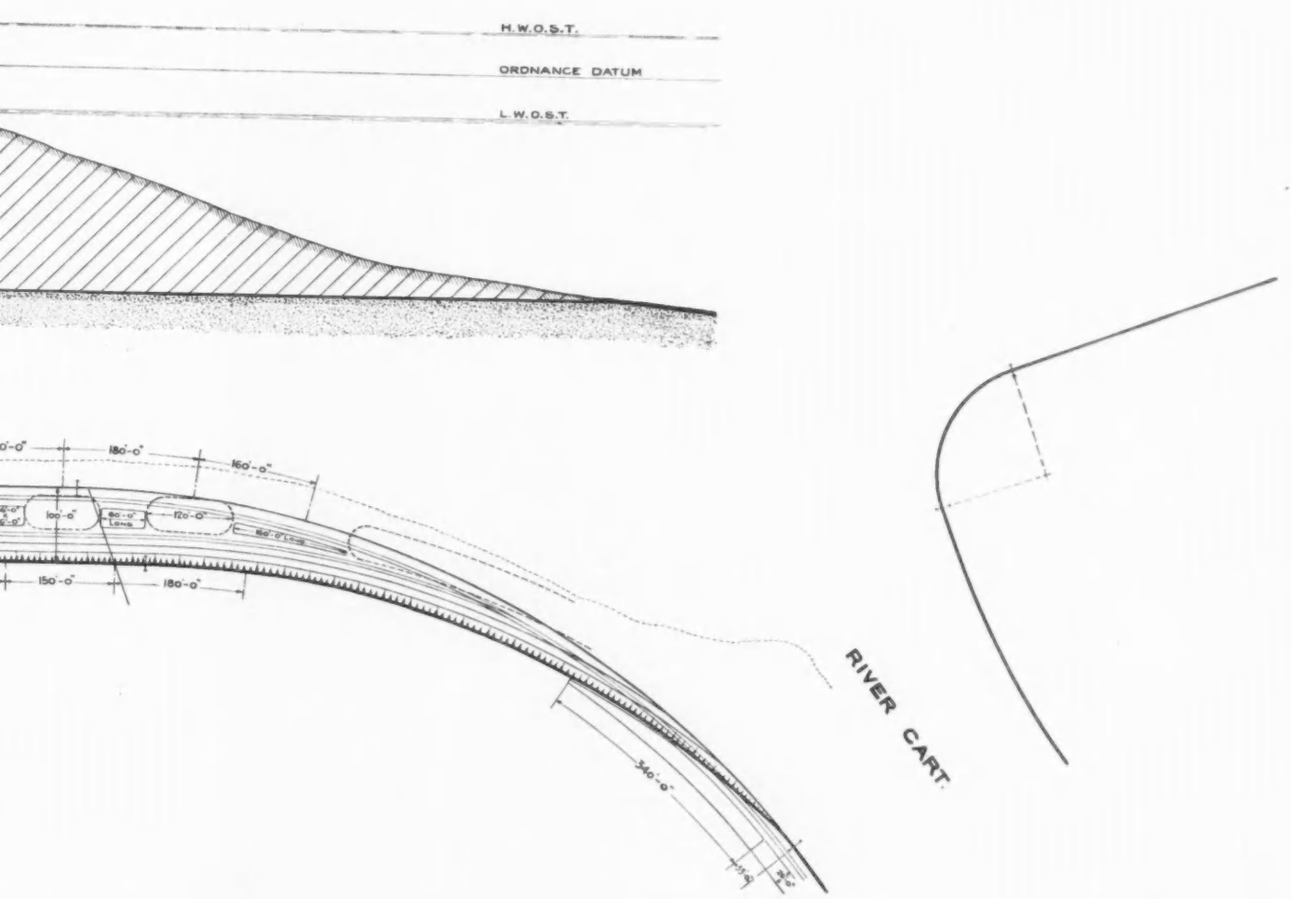
RIVER CLYDE.



PLAN

Fig. 1

ueen Mary"


H.W.O.S.T.
ORDNANCE DATUM
L.W.O.S.T.
180'-0"
160'-0"
100'-0"
90'-0" Long
120'-0"
150'-0"
180'-0"
340'-0"
RIVER CART

River Work for the "Queen Mary"

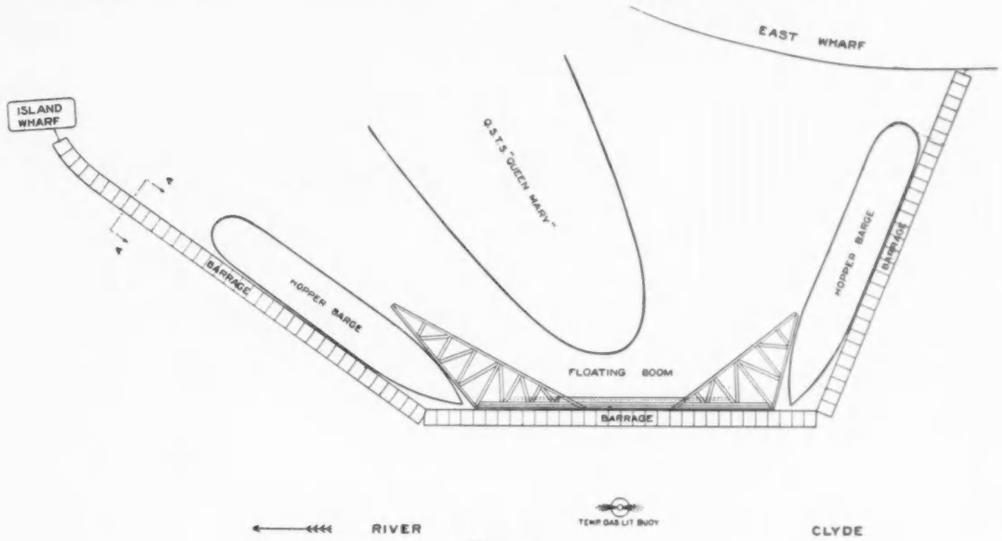


Fig. 5.

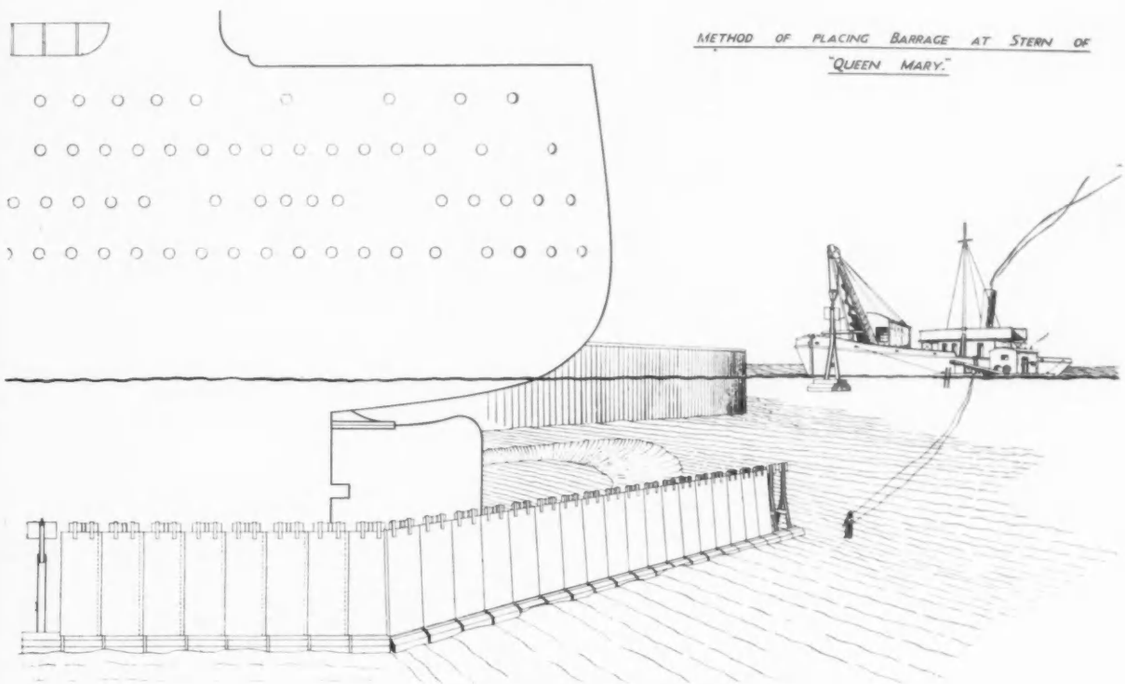


Fig. 7.

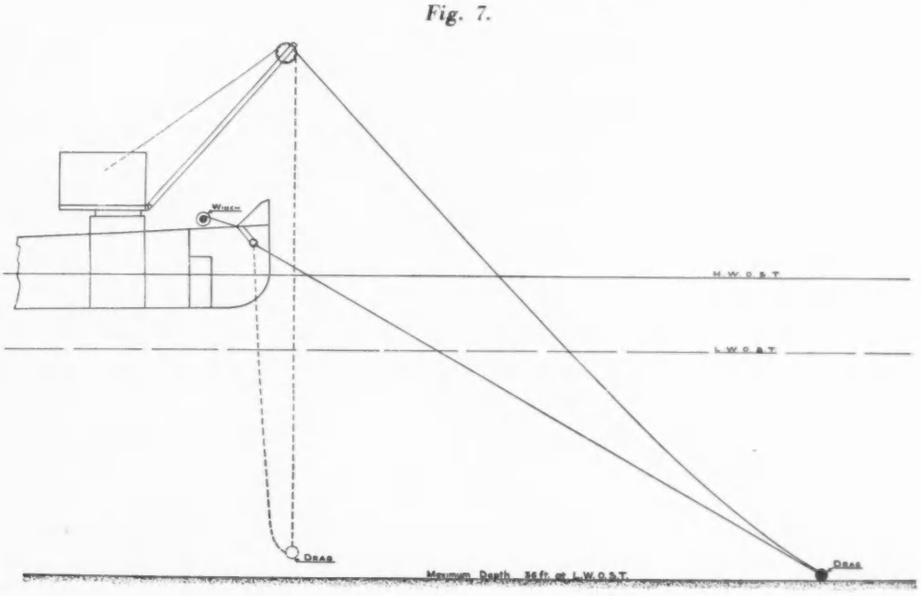


Fig. 9. Method of using Drag Roller.

River Work for the "Queen Mary"—continued

comparatively small. This called for special precautions in the preparation of the river bed on which the towers rested and was done in the following manner. Before the launch of the vessel the whole area at the entrance to the basin on which the towers would rest had been carefully dredged to as uniform a level as possible, and a sounding survey of the bottom made

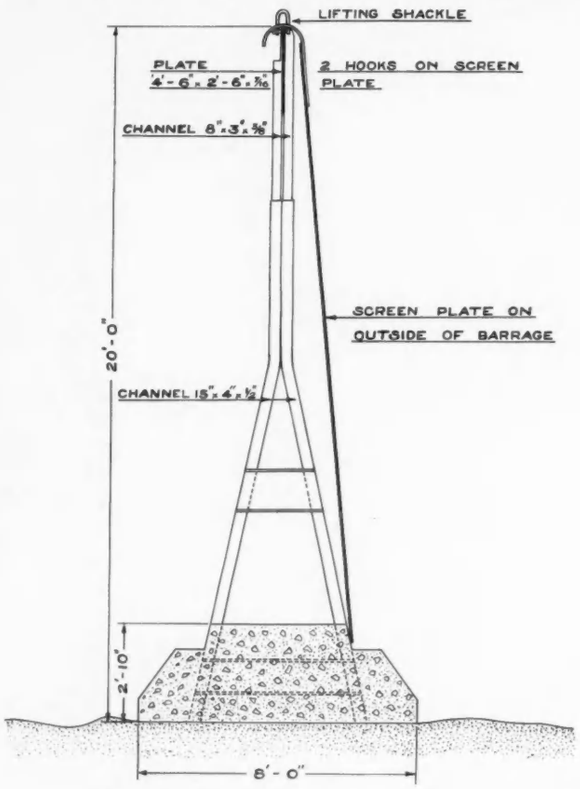


Fig. 6. Section AA (Fig. 5). Weight 6½ tons.

and plotted. After the launch, and when the vessel had been moored in the fitting-out berth, heavy sand was deposited from hoppers where necessary in the depressions disclosed by the survey and the area thereafter rolled by means of a drag roller until a level bed was obtained.

This roller, which was specially constructed for the purpose, was designed to act as a drag as well as a roller and was of relatively small diameter. It had a length of 18 ft. and a submerged weight of 3½ tons, and the method of using it is shown in Figs. 8 and 9. It was suspended under the bows of a grab dredger by means of the bow crane, and in this position could be readily raised or lowered or carried from one point to another as required. To each end of the roller the twin anchor chains were secured by means of a swivelling attachment, the chains being hauled in through the hawse pipes or paid out evenly as required from a common winch barrel on board. When lowered on to the river bed and the chains paid out with the engines of the vessel moving astern, the roller could thus be drawn slowly over the line with its axis at right angles to the line of travel. At the end of its travel it was lifted by the crane and the drag chains hauled in, when the vessel moved ahead to the starting point where the roller was again lowered and the process repeated. Usually five or six traverses sufficed to secure a level bottom over which the diver could walk on a firm bed. When each of the lines had been rolled in this way and a final survey made, a heavy chain cable was laid on the bottom along the line to be taken up by the outer edges of the concrete blocks.

The steel towers, numbering 97 in all (which, incidentally, had been used as internal struts in the "Queen Mary" at the time of her launch), were set in concrete bases measuring 8 by 6 ft., each separate unit weighing 6½ tons. They were built up on shore and transported on punts to the site where they were lowered into place by a floating crane and set in position by divers, sighting rods attached to the towers and projecting above water being employed to check their positions. Usually from half an hour to an hour sufficed for the laying of one block. Comparatively few re-settings or large adjustments were required, and the work as a whole, including the levelling and rolling of the river bed, was completed in 92 working days. The removal of the screen was commenced a few weeks before the vessel was due to go down the Clyde and was effected in 31 working days, after which the protecting boom was removed and the area in front of it dredged to the requisite depth to admit of the vessel being hauled out into the river and straightened up in readiness for her departure.

As the time for her departure approached, the need for a close and accurate survey of the whole of the river channel became increasingly important. Areas where the presence of loose boulders was suspected had to be swept and afterwards examined by diving bell, and at other points where the deepening of the channel might have effected the stability of the banks continual check soundings were necessary. As a final and independent check, longitudinal traces of the river bed were taken by means of a self-recording echo sounding machine which the Trustees had installed on their tug "Clyde," the graphs from which were plotted against the positive soundings taken by the river survey party in the ordinary way. The results were confirmatory. This instrument, which was described in Capt. Hutchings' paper* last session, is based on the principle of magneto striction, that is, the property of shrinkage of nickel or iron when placed in a magnetic field. By means of an oscillatory electrical discharge through the windings of a laminated structure of nickel, mechanical vibrations are set up which are transmitted to and reflected from the river bed to a receiver containing a similar structure. On picking up the mechanical vibration of the same frequency, this receiver generates an electrical impulse. The transmitter and receiver are placed 6 ft. apart in the bottom of the survey vessel. Both transmitter and receiver are connected to a recording instrument placed in the surveyor's room and consisting of a revolving arm carrying a pen or stylus moving at constant speed across a strip of paper. The paper is sensitized with potassium iodide and the passage of a current from the pen causes a mark to appear on the paper at the instant of its passage. The sound transmission is made at the instant the pen crosses the zero line, and the echo is received and applied to the pen at a point below the zero line equal to the depth of water. Thus the strip being drawn automatically through the recorder at a predetermined rate, the mark of each sounding joins up to that of the previous one and so traces a continuous graph of the river bed as shown in Fig. 10.

In conclusion, it may be stated that from first to last nearly 5,000,000 tons of material was removed from the river and

*Trans. I.E.S., 1935-36, vol. 79, p. 208.

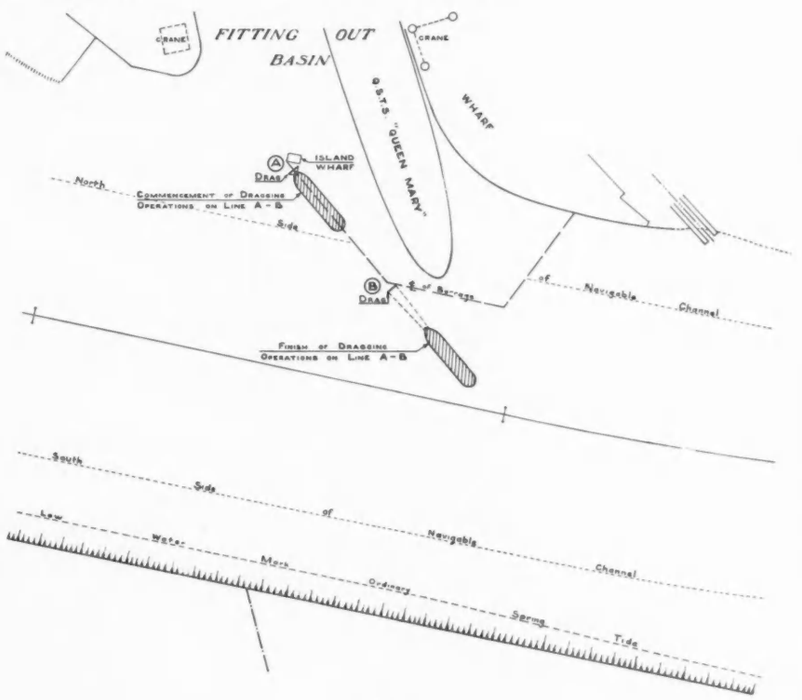


Fig. 8.

River Work for the "Queen Mary"—continued

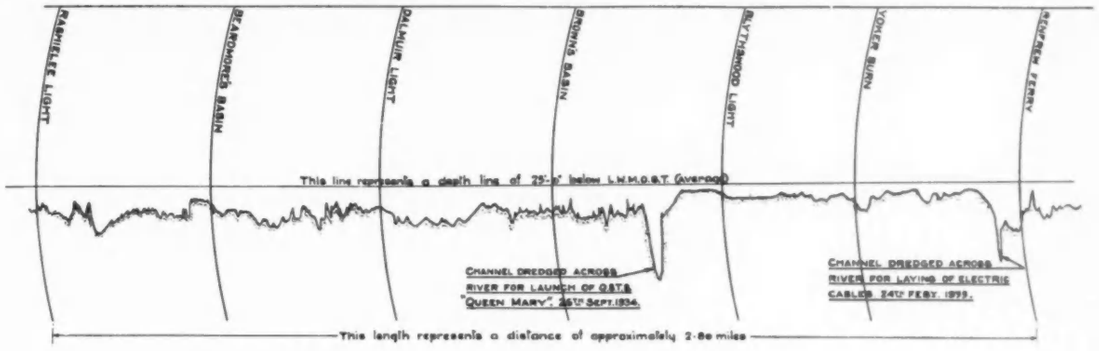


Fig. 10.

deposited at sea as the result of the various operations connected with the "Queen Mary" alone, but permanent improvements have been effected in the river and have added another chapter to that long record of improvements and extensions which have marked the development and made the history of the River Clyde.

The Port of Colombo

Liquid Fuel Imports.

The quantity of liquid fuel imported at Colombo during August, 1936, amounted to 16,053 tons, as compared with 18,351 tons in August, 1935. For the first eight months of 1936, 191,965 tons of liquid fuel were imported, as compared with 202,752 tons in the corresponding period of 1935.

Liquid Fuel Bunkers supplied to Steamers.

Liquid fuel bunkers supplied to steamers in August, 1936, was 42 ships bunkered with 20,555 tons of liquid fuel, as compared with 37 ships with 18,879 tons in August, 1935. During the first eight months of 1936, 353 ships were bunkered with 171,740 tons of liquid fuel, as compared with 333 ships with 174,641 tons in the corresponding period of 1935.

Coal Imports.

The quantity of coal imported during the month of August, 1936, was 44,954 tons, as compared with 12,840 tons in August, 1935. Altogether 297,214 tons of coal were imported during the first eight months of 1936, as compared with 279,466 tons in the corresponding period of 1935.

Coal Bunkers supplied to Steamers.

The number of steamers bunkered during August, 1936, was 68 with a total of 17,069 tons of coal, as compared with 62 steamers with 15,923 tons in August, 1935. During the first eight months of 1936, 533 steamers were bunkered with 154,245 tons of coal, as compared with 556 steamers with 159,136 tons in the corresponding period of 1935.

Number and Tonnage of Vessels Entered and Cleared.

The number and tonnage of vessels other than country craft engaged in trade, which entered and cleared at the Port of Colombo during August, 1936, and the first eight months of this year, with comparisons for 1935 and 1934, is as follows:—

	Vessels engaged in Foreign Trade		Vessels engaged in Coasting Trade	
	No.	Tons	No.	Tons
(a) Entered during August, 1936 ...	221	1,022,350	6	9,773
,, ,, 1935 ...	212	958,987	8	19,380
,, ,, 1934 ...	223	985,775	3	9,333
During the eight months ended August, 1936	1,740	8,108,060	39	87,696
During the eight months ended August, 1935	1,772	8,103,463	40	109,558
During the eight months ended August, 1934	1,752	8,004,963	30	89,431
(b) Cleared during August, 1936 ...	220	1,000,905	2	5,989
,, ,, ,, 1935 ...	214	961,159	2	6,346
,, ,, ,, 1934 ...	220	985,785	2	8,278
During the eight months ended August, 1936	1,761	8,254,826	23	71,843
During the eight months ended August, 1935	1,796	8,159,317	16	53,203
During the eight months ended August, 1934	1,763	8,031,674	23	80,745

Tonnage of Imports and Exports.

The tonnage of imports and exports at the Port of Colombo during August, 1936, and the first eight months of this year, together with comparisons for 1935 and 1934, is as follows:—

	During August		
	1934	1935	1936
	Tons	Tons	Tons
Imports (excluding Coal and Oil) ...	97,471	84,632	86,039
Exports (,, ,,) ...	67,541	46,424	45,131
Total	165,012	131,056	131,170

	During the eight months ended August		
	1934	1935	1936
	Tons	Tons	Tons
Imports (excluding Coal and Oil) ...	685,733	675,098	705,654
Exports (,, ,,) ...	502,826	378,664	356,486
Total	1,188,559	1,053,762	1,062,140

Oil Facilities Receipts.

The oil facilities receipts for August, 1936, were Rs.54,430, as compared with Rs.62,549 in August, 1935. The total receipts for the first eight months of 1936 were Rs.657,672, as compared with Rs.716,980 in the corresponding period of 1935.

The Port of Amsterdam

The position of the Port of Amsterdam in regard to number of vessels and tonnage and to goods traffic arrived and sailed, as compared with the corresponding figures of last year, is as follows:—

SEAGOING VESSELS AND TONNAGE.

	ARRIVALS				SAILINGS			
	No.	Per Cent.	N.R.T.	Per Cent.	No.	Per Cent.	N.R.T.	Per Cent.
Oct. 1935 ...	242		349,904		253		382,452	
,, 1936 ...	262		367,006		270		363,254	
	+20	+8·26	+17,102	+4·89	+17	+6·72	−19,198	−5·02
Sept. 1936 ...	236		327,063		252		362,352	
Oct. 1936 ...	262		367,006		270		363,254	
	+26	+11·02	+39,943	+12.21	+18	+7·14	+902	+0.25
Jan.-Oct.								
1935	2,395		3,484,752		2,418		3,557,983	
1936	2,488		3,523,056		2,515		3,555,570	
	+93	+3·88	+38,304	+1·10	+97	+4·01	−2,413	−0·07

SEAGOING GOODS TRAFFIC.
(In Tons of 1000 Kilos*).

	1 Import	2 Transit incl. in col. 1	3 Export	4 Transit incl. in col. 3	5 Total col. 1 & 3
Sept. 1935	234,349	53,298	132,259	55,478	366,608
,, 1936	274,129	67,122	169,943	61,106	444,072
	+39,780	+13,824	+37,684	+5,628	+77,464
	+16·97%	+25·94%	+28·49%	+10·14%	+21·13%
Aug. 1936	219,482	46,313	144,719	64,763	364,201
Sept. 1936	274,129	67,122	169,943	61,106	444,072
	+54,647	+20,809	+25,224	−3,657	+79,871
	+24·90%	+44·93%	+17·43%	−5·63%	+21·93%
Jan.-Sept. 1935 ...	2,340,776	521,738	1,269,714	554,660	3,610,490
,, 1936 ...	2,293,780	540,393	1,328,570	588,416	3,622,350
	−46,996	+18,655	+58,856	+33,756	+11,860
	−2·08%	+3·57%	+4·64%	+6·09%	+0·33%

* These figures have been taken from the monthly statistics of the Central Bureau, The Hague, Holland.

The Institution of Civil Engineers

Sir Alexander Gibb on Engineers and Empire Development. Co-operation, the Safeguard for the Future of Civilisation

Sir Alexander Gibb, G.B.E., C.B., F.R.S., in his Presidential Address to The Institution of Civil Engineers on the 3rd November, said that he proposed to take as his subject Engineers and Empire Development; in this connection he would refer first of all to an Address which had been delivered before The Institution 90 years ago by Sir John Rennie, the third President, who had dealt with the changes which had been effected in Great Britain in the 90 years since 1756, when that great man Smeaton had first been invited to design and build the new Eddystone Lighthouse. Sir John had pointed out that in 1724, when Smeaton was born, there had been no canals, railways, artificial harbours, or machinery which in his day would be thought worthy of the name. Public roads had been little better than mere tracks across the country. From the industrial and manufacturing point of view Britain had been wholly undeveloped, and, as regards transport, the country had not been even as far advanced as 1,000 years before.

By 1846 there had been a complete change. Britain had become the foremost nation in the world in wealth, power and prestige, and Sir John Rennie's address of 1846 contained the story of the men largely responsible for this change, such as Smeaton, Watt, Telford, Rennie, and many others. They were responsible for the construction of roads, bridges, aqueducts, and canals; river navigation, docks, and harbours; the construction and adaptation of machinery; the drainage of cities and towns, and of all the other branches of engineering born in that wonderful age, and so impressively referred to in the Charter of The Institution of Civil Engineers.

H. R. Palmer, one of the founders of The Institution of Civil Engineers, had said, in the paper that he read at the meeting of the Institution in the Kendal Coffee-house on the 2nd January, 1818, that "the Philosopher" (that is to say the Scientist) "searches into nature and discovers her laws and promulgates the principles upon which she acts. The Engineer receives those principles and adapts them to our circumstances. The working mechanic governed by the superintendence of the Engineer, brings his ideas into reality."

More recently, Mr. Vincent Massey, High Commissioner for Canada, in Great Britain, stated in May, 1936, that "Canada, in a very special way, might be considered the child of modern engineering. The growth of land, sea and air transport during the last half century and, above all, the use of hydro-electric power in recent years, have made it possible to build from the scattered colonies of British North America one of the foremost industrial nations of the world."

Sir Alexander said that there could be no better instance of engineering as a factor of nation or empire-building than this, and whilst he could not hope to summarize in the briefest fashion the great names and the great deeds of the last two generations, he wished to refer to some of the works of civilization that engineers had carried out. He said he would speak of engineers and engineering in the widest sense—in the sense that the first civil engineers understood—on which broad interpretation The Institution of Civil Engineers had been founded, and for which it still stood; namely, embracing all branches of engineering, and being termed "civil" as differentiating it from the military engineer only.

He referred first of all to canals, which, according to Cobden, were regarded as the primary material agent of the wealth of Great Britain in his time. Although canals had now been largely superseded by other forms of transport, they still played an important part, especially such canals as the Suez and Panama Canals. Sir Alexander gave as other examples the Welland Canals, the first of which was opened in 1829 and the last but a few years ago, providing a navigable waterway to surmount the 325-ft. rise between Lake Ontario and Lake Erie, whereby, with the system of canals on the St. Lawrence and at Sault St. Marie it was possible for ocean-going steamers to penetrate half-way across the Continent of America, over 2,250 miles inland from the sea.

He said that Roads and Empire were co-eval and pointed out how, after the break-up of the Roman Empire, its great road system fell into decay, not only in Great Britain but generally throughout Europe. To-day the age of roads had returned and more than 1,000,000 miles of modern roads now served the Empire. That was still only the beginning, when it was seen that in Kenya, out of 10,500 miles, only 723 had a metalled surface, the remainder being earth-roads impassable after heavy rain, and in the 370,000 square miles of Nigeria more than half of the 15,000 miles of road were fair-weather roads only. What was required was road planning on really imperial lines, and the social and political effects would be tremendous.

Along with roads, bridges were essential as they carried traffic over a gap that would otherwise be impassable. As recent examples of the effect of individual bridges in opening up and changing the economy of a whole country, he instanced the 12,064-ft. long Lower Zambezi Bridge, the longest bridge in the world, opened in 1935, and the Birchenough Bridge over the Sabi river in Southern Rhodesia, which had reduced from 600 miles to 450 miles the route between Bulawayo and Beira and had made readily accessible for the first time a wide area in the east of Southern Rhodesia. Technically, there was almost no limit to what the engineer could bridge, and that meant that the most effective of natural boundaries had now ceased to be of material import.

Sir Alexander then referred to railway construction in the Empire, which might be said to date from the middle of the last century. In 1850, Canada had 66 miles of railway; she had now 43,000 miles. That was only one of the examples found in the dominions and colonies. The value of railways to a country was outstanding and that could be seen from the Indian railway systems, which long before they had been completed, banished for the first time in that world-old country the ever-present spectre of famine. The Canadian Pacific Railway—perhaps the greatest of all individual works of empire-building—brought a new ocean into the Empire. Vancouver had recently celebrated its jubilee, and to-day had a population of over 300,000 and shipped over one hundred million bushels of wheat in a single year.

The steamship era came into being more or less simultaneously with the railways. The steam engine produced the Industrial Age, with all its requirements, aggregations of population, the carrying of increasing volumes of food, raw materials and manufactured products. It then became necessary to look overseas for raw materials and markets, and there the steamship played its part. The benefits obtained from the modern ship could not have been so valuable without the intervention of cold storage, which made possible a trans-Atlantic trade in meat, fruit, and all sorts of more perishable food stuffs. Within three years of its introduction, Victoria and New South Wales had built up with Great Britain a yearly butter trade of £1,000,000. The seaborne meat trade meant to Empire farmers some £80,000,000 a year.

With the increase in the size of ships, Sir Alexander referred to the great changes in the major ports of the world. The equipment and the facilities of a modern port were, like its organization and management, on so large a scale nowadays that a port such as London was a miniature empire in itself. It was interesting to remember, as an example of the growth in the facilities for shipbuilding, that near a point on the Clyde where Smeaton's old chart showed 3 feet 6 inches at high-tide, the "Queen Mary" was launched in 1934.

He referred also to the major means of transport on land, sea, and air, on the success of which modern civilization, with its increasingly artificial conditions, was dependent. He felt that there was a danger that the machine might take charge, and that perhaps the greatest problem that the enigneer now had to face was the sane control of the forces of engineering, especially in transport. He anticipated that a day would come when something like a unified control, at least in all questions of broad policy, of all means of transport, would be in force.

Whilst the commercial application of the aeroplane had not yet been developed very far, he mentioned that it was almost wholly by air transport that the New Guinea goldfields and various gold and copper mines in Northern Canada had been opened up. In New Guinea, all the machinery and parts for two large dredgers and a hydro-electric plant of several thousand horse-power had been carried wholly by aeroplane over a range of mountains 5,000 feet high, into the interior, and had then been assembled and put to work within a year.

Whilst agriculture became daily more dependent on the work of the engineer, it was perhaps through irrigation that the engineer had been of the greatest benefit to it in the past. In India and Egypt were found examples of the great works of irrigation engineers. The latest, and perhaps the most spectacular, of engineering projects was the Lloyd Barrage across the Indus at Sukkur, which had more than doubled the area of cultivated land in the whole Province of Sind. Another type of irrigation was found in the Great Australian Basin, where over three thousand artesian wells now tapped the subterranean water, giving a daily flow of over 500,000,000

The Institution of Civil Engineers—continued

gallons. Water-supply, sanitation, drainage, land reclamation, etc., were other very important aspects of engineering which time only allowed of mentioning in passing.

Before closing, Sir Alexander said that he must refer to one of the greatest engineering developments in the latter part of the nineteenth century; namely, the applications of electricity in its numerous forms. Within two generations the telegraph and the telephone had become the principal channels of business communication, whilst by radio the most distant parts of the world were divided in point of time by only the smallest fraction of a second. As had already been shown, hydro-electricity had been one of the most powerful influences in Empire development.

Sir Alexander hoped that he had sufficiently illustrated the two points with which he started; namely, that engineering, turning to practical account the discoveries of science, was the foundation of civilization, and that, in the same way, engineering had been the foundation of the British Empire—as it had to be of every Empire. In nis opinion, the opportunities of the future were vastly greater than any that the past had offered, but he looked with some anxiety on the years to come. The machine sometimes seemed to be taking control; inventions and developments succeeded one another with bewildering speed, and there seemed to be no limit to the possible results of uncontrolled and misapplied ingenuity. In such circumstances, no one could see where engineering might lead, or what limit there was to the power of the Engineer. One thing was certain, however, and that was that there ought to be control.

Sir Alexander had estimated that engineering provided directly or indirectly the livelihood of about one-seventh of the working population of Great Britain. To-day was the age of ever-increasing specialization, and it had inevitably resulted in engineering being split up into dozens of different categories and groups. He thought that if the great problems of the future were to be adequately dealt with, it was necessary to put a brake on that continuous disintegration, and that an attempt of some form or other should be made to co-ordinate and unite engineering activities in the broadest sense. It was necessary for everyone, individuals and institutions alike, to subordinate some of their more personal and independent views and feelings to a common policy. He hoped that the steps that the Institution of Civil Engineers were taking in that matter would lead to profitable results. Useful work had already been done in the wider question of co-operation with engineering institutions, but as yet it was still on far too restricted a scale. He would like it to be possible for one broad policy to inspire and guide all classes of engineers, and he hoped that in time there would arise a body of engineering opinion so weighty, so authoritative, so sure, so sane, that it would prevent waste of energy and misplaced enterprise, and would inevitably command attention in the politics, administration, and life of Great Britain and the Empire. He believed that that would be the greatest, and perhaps the only safeguard, for the future of civilization.

Tilbury Passenger Landing Stage.

Forty-eight vessels, totalling 509,760 gross register tons, used the Tilbury Landing Stage during the month of October.

Dover Train Ferry Scheme.

In the November issue of this journal we included an article on the Dover Train Ferry Scheme, and the lower illustration on page 14 referred to " Caisson in position," but we are now informed that this should read " Storm Gate in position."

The Port of Karachi.

In the month of August, 1936, 66 vessels with a net registered tonnage of 170,866 entered the Port of Karachi, and 70 vessels cleared of 180,132 n.r.t. The number of vessels which entered and cleared during August, 1935, were:—Entered, 72 vessels of 188,333 n.r.t., and cleared, 67 vessels of 178,191 n.r.t.

For the five months, April-August, 1936, the number of vessels entering the Port of Karachi amounted to 361 of 940,120 n.r.t., and clearances totalled 362 vessels of 939,841 n.r.t. During the corresponding period of 1935, 366 vessels of 968,506 n.r.t. entered and 359 vessels of 954,277 n.r.t. cleared. The above figures do not include country craft.

The amount of cargo handled in August, 1936, was:—Imports 63,882 tons, and exports 75,376 tons, a total of 139,258 tons of cargo. In August, 1935, imports amounted to 57,110 tons, and exports 81,675 tons, a total of 138,785 tons of cargo. For the five months, April-August, 1936, imports amounted to 314,467 tons, and exports 404,871 tons, a total of 719,338 tons. For the corresponding period of 1935, imports were 293,124 tons, and exports 388,275 tons, a total of 681,399 tons.

The Moscow-Volga Canal nearing Completion.

Within seven months the Moscow-Volga Canal will be completed. This new waterway, connecting the Soviet capital with the Caspian, the Baltic and White Seas, will make Moscow into a port of five seas. The Canal starts with a huge concrete dam at the spot where the village of Ivankovo used to stand (this village has been moved some five kilometres away). A special canal 500 metres long, leading from the dam to the Volga, has been constructed, and in the spring of next year the waters of the Volga will flood a vast territory of 360 sq. kilometres, up to the city of Kalinin. This huge reservoir, containing 1,200 cubic metres of water, will serve both the Canal and the Upper Volga, which often becomes shallow in summer time.

The way from the Ivankovo Reservoir to the Lower Volga runs through Lock No. 1, the largest on the whole Canal. This lock and a hydro-electric power station of 30,000 k.w. capacity is practically finished.

Steamers passing along the Canal from the Volga will gradually rise through a number of locks. The water required for the operation of the Canal will be pumped by powerful pumping stations. One of these stations near lock No. 2, will be able to supply 2,275 million gallons of water a year.

The construction of a third lock near the village of Dmitrov and a number of other locks is nearing completion. At the same time, the building of a railway bridge and two highways across the Canal is also well advanced.

A huge dam for the sixth lock in the Canal, which was completed last spring, enclosed the waters of the Iksha River, and formed a large lake, known as the Iksha Reservoir. This was the first of a chain of new lakes formed by similar dams across the Ucha, Vyazma and Klyazma rivers. The largest of these, called the Lower Ucha Reservoir, will supply water to the city of Moscow.

Intensive work is being carried on near the Khimki Reservoir, where the construction of the Northern Port of Moscow is in full swing. This is one of the most beautiful structures of the Canal. The foundations for a river station have already been laid. A huge park with fountains and a water sports pool will be laid out along the embankment near the river station.

Work on the ninth lock has already been completed, while the tenth lock at Pererva has been in operation during this year's navigation season. The foremost architects and sculptors of the Soviet Union have taken part in the building of the locks. The Moscow-Volga Canal is expected to be as fine a piece of work as the Moscow Metro.

The Panama Canal.

A more extensive movement of fresh fruits through the Panama Canal on their way from the Pacific Coast to France is expected following an announcement that the French Line is proceeding with the construction of two 17-knot " fruit streamliners " and the installation of refrigerator equipment in two additional vessels.

For the past fiscal year the records of the Panama Canal show that 336,367 tons of fresh fruit were carried through the canal, an increase of 65,701 tons over the previous year. The largest portion of this total consisted of 227,779 tons shipped from the West Coast of the United States to Europe.

The new " streamliners," as they are being called in Europe to describe their ultra-modern design, represent a fast type of vessel equipped for the handling of 80,000 boxes of fruit. While only two of these carriers have been ordered for early delivery, they are expected to be models for a series of similar ships.

The vessels which have been selected for conversion into fruit carriers are the s.s. " San Pedro " and the s.s. " San Mateo," each of which will be rebuilt to carry 60,000 boxes of fruit and 100 tons of frozen fish.

These ships will supplement the French Line's present service maintained by the m.s. " Oregon," the m.s. " Washington," the s.s. " Wyoming," the s.s. " Wisconsin," and the freighters " San Francisco," " San Diego," " San Antonio," and " San Jose," all of which have cold storage facilities.

Among the other lines which are now shipping fruit through the Panama Canal are the Hamburg-America Line, the North German Lloyd, the East Asiatic Co., the Blue Star Line, the North Pacific Coast Line, Furness, Withy and Co., the Johnson Line, the Interocean Line, and the Olsen Line.

The other principal trade routes for fresh fruit during the past year in the order of their importance were:—West Coast of the United States to the East Coast, 47,020 tons; West Coast of Canada to Europe, 24,079 tons; Australasia to Europe, 11,594 tons; and West Coast of South America to Europe, 10,480.

Port of Southampton Topics

Docks Statistics for October.

SOUTHAMPTON DOCKS statistics for October would present a very favourable picture but for the fact that there was a rather big drop in the volume of freight handled as compared with the corresponding month of 1935.

Imports amounted to 67,028 tons, as compared with 70,614 tons in October last year. Exports were 41,649 tons, compared with 45,113 tons. The respective decreases were, therefore, 3,586 tons inward and 3,464 tons outward.

The number of ships entering the port mounted from 245 to 250, and those leaving numbered 244, as against 241.

The tonnage returns were also satisfactory. Inward gross tonnage rose from 1,492,930 tons to 1,587,954 tons, an advance of 95,024 tons. Outward the return was 1,571,051 tons, as compared with 1,521,284 tons, an increase of 49,767 tons.

The net tonnage totals increased by 44,300 tons inward and 37,183 tons outward. The inward figure was 866,010 tons, compared with 821,710 tons, and the outward 859,870 tons, as against 822,687 tons.

The most pleasing feature of the statistics is the fact that the volume of passenger traffic mounted steeply. Travellers arriving numbered 13,271, as compared with 11,188, and those leaving numbered 18,871, as against 15,338. The respective advances were, therefore, 2,083 inward and 3,533 outward.

Good Year for Southampton.

Speaking at one of the departmental gatherings of the Southern Railway at Southampton, Mr. R. P. Biddle, Docks and Marine Manager, said it was anticipated that when the dock figures for the whole of this year were published it would be seen that the number of passengers and the quantity of cargo dealt with at the port would have exceeded those of last year. Several records were broken by last year's figures.

It was anticipated, said Mr. Biddle, that well over a million tons of cargo would be dealt with in the year, and that passenger carryings, which last year were 537,355, would be increased by about five per cent.

A further gratifying feature would be the volume of ship's tonnage using the docks this year. For the first time in history, it will be well over 18,000,000 tons, said Mr. Biddle.

Orient Line and Southampton.

Southampton will next spring again become the port of disembarkation for passengers travelling by the Orient Line's mail vessels from Australia.

Plymouth is normally the first English port of call by the Company's ships which afterwards go to London, but for many years past the Orient Line have favoured Southampton during the rush season.

The "Oronsay," arriving on March 24th, will make the first of these calls. They will continue until the "Ormonde's" call on June 30th, after which Plymouth will again be the first port of call for the vessels.

The Port of Rotterdam.

The Chamber of Commerce and Industry of Rotterdam has issued the statistics concerning the movement of sea-going ships in the New Waterway, and which are as follows:—During October, 1936, 1,072 ships of 1,705,330 n.r.t. entered the Port of Rotterdam, as compared with 936 ships of 1,501,151 n.r.t. during October, 1935. The number of ships entering for the small ports in the environs were 202 of 367,177 n.r.t., as compared with 195 ships of 368,939 n.r.t. in October, 1935.

For the first ten months of the year, January to October, 1936, 10,331 ships of 16,834,516 n.r.t. entered the Port of Rotterdam, as compared with 9,105 ships of 14,740,838 n.r.t. in the corresponding period of 1935. The number of ships entering for the small ports in the environs of Rotterdam during the first ten months of 1936 were 2,041 of 4,023,403 n.r.t., as compared with 1,970 ships of 3,927,090 n.r.t. in the corresponding period of 1935.

After deducting the number of ships counted more than once in the different ports, the number of entrances in the month of October, 1936, amounted to 1,206 vessels of 1,890,385 n.r.t., as compared with 1,079 ships of 1,751,451 n.r.t. in October, 1935. For the first ten months of 1936, the total entrances were 11,687 vessels of 19,039,995 n.r.t., as compared with 10,506 ships of 17,149,635 n.r.t. in the corresponding period of 1935. These figures are for the whole region of the Port of Rotterdam with its environs, comprising the delta formed by the mouths of the Rivers Rhine and Meuse.

Irish Harbour Topics

New Liffey Bridge.

WITH a view to dealing with the increasing volume of cross-river traffic in the city, the Dublin Port and Docks Board has passed the following resolution: That this Board respectfully suggests to the Dublin Corporation as an alternative of the proposed bridge at Guild Street-Cardiff Lane site, that the erection of an uplift bridge from East Wall Road to Thorncastle Street be taken into consideration in the forthcoming survey of the city by their Town Planning Committee as a possible solution of the traffic congestion at the port, and over a wide area west of these two points.

The motion was proposed by Mr. Percy McGrath, who urged that the Board, with its intimate knowledge of port requirements, would wish to place before the Town Planning Committee an expression of opinion as to the most suitable location of any new bridge east of Butt Bridge. In two years' time, he said, there would be an additional seventy acres industrialised at Alexandra Road, and in time also new factories would be built on the reclaimed land off East Wall Road. All vehicles going south could be routed by the new bridge, and so relieve traffic congestion in the centre of the city.

Mr. P. J. Munden seconded, and thought that the Board should either appoint a deputation to the Town Planning Committee, or ask for representation on the Committee, so that they could discuss any plans relating to the Port of Dublin.

It was decided to send a copy of the resolution to the Acting City Manager, and to the Secretary, Dublin County Council.

Lord Runciman, Chairman of the Anchor Line, in a letter to the Dublin Port and Docks Board, thanked the Board and officials for their co-operation in establishing the Dublin-New York liner service, which has now concluded its first season's sailings. It had been a great satisfaction to know that the efforts of the Company had appealed greatly to the travelling public on both sides of the Atlantic, the letter stated.

A letter of appreciation was also read from the Belfast Harbour Commissioners, who forwarded a resolution expressing their thanks for the hospitality extended to their members on the recent official visit to Dublin.

Cork Port Hard Hit.

A memorandum on the present position of the Port of Cork, issued by the Cork Harbour Commissioners states that the revenue of the port, which in 1930 was £96,964, had fallen by 1935 to £78,617. This decline was due to reduced imports and exports, particularly imports of maize, flour, fruit, artificial manures, cattle feeding stuffs and sugar, and exports of live stock, eggs and bacon. The statement concludes: "It is clear that if any improvement in the existing situation is to take place it can only be by the industrial development of Cobh and district, preferably by the establishment of heavy industries that will necessitate the import of raw material through the port. It is suggested that the construction or repair of any vessels which may be built or bought to establish an Irish mercantile marine might eventually be carried out in the Port of Cork."

Seaborne Goods Traffic of the Lower Weser Ports during September, 1936.

Total turnover in seaborne goods traffic of the Lower Weser Ports during September 1936, according to the Statistical Office in Bremen, at 742,450 tons, was 19,434 tons more than in the previous month. The September 1935 result was exceeded by no less than 91,592 tons.

Total seaborne goods traffic through the Bremen ports in September 1936, at 226,602 tons, were 10,200 tons more than in the previous month and 26,521 tons more than in September 1935.

The increase in incoming goods is chiefly due to increased imports of raw materials, such as ores, mineral oils and manures.

Exports via Bremen during September 1936, at 400,310 tons, showed the best monthly result of the year. The figure given is an increase over the previous month by 19,735 tons, and over September 1935 by 89,056 tons.

Compared with September 1935, export of raw materials and finished manufactures via Bremen has increased considerably.